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THE FARMER'S MAGAZINE.

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(SECOND SERIES.)

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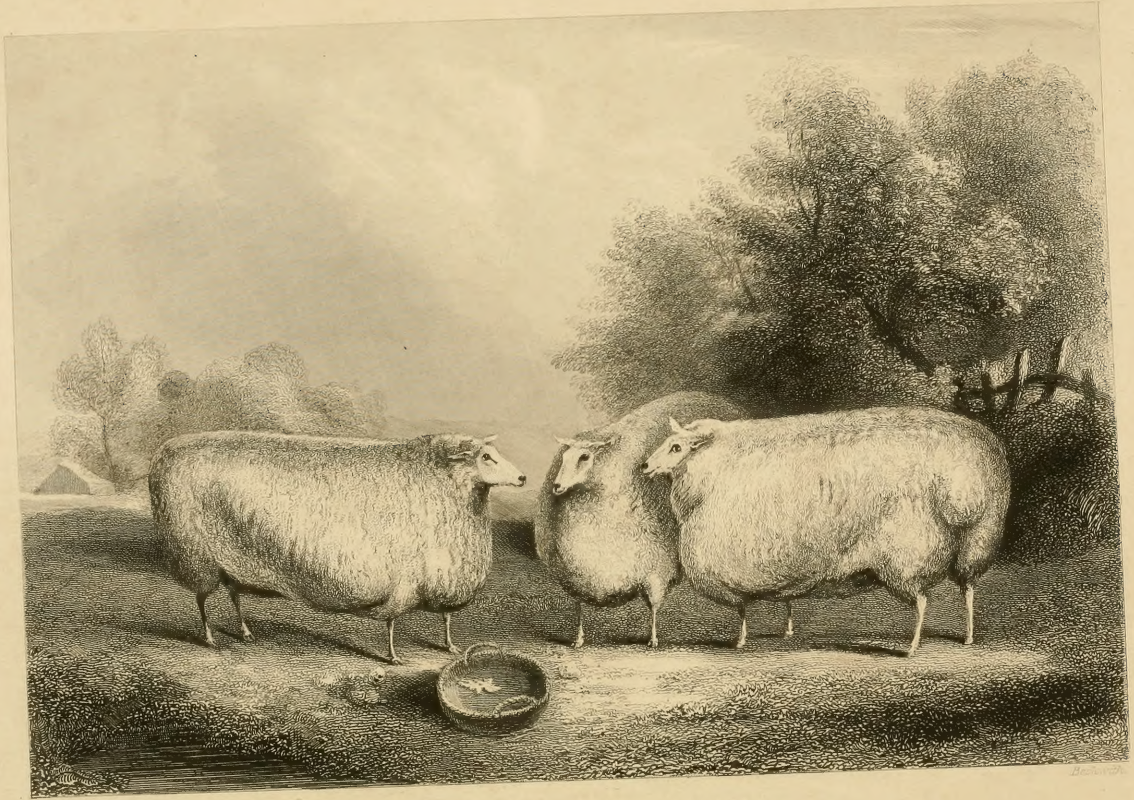


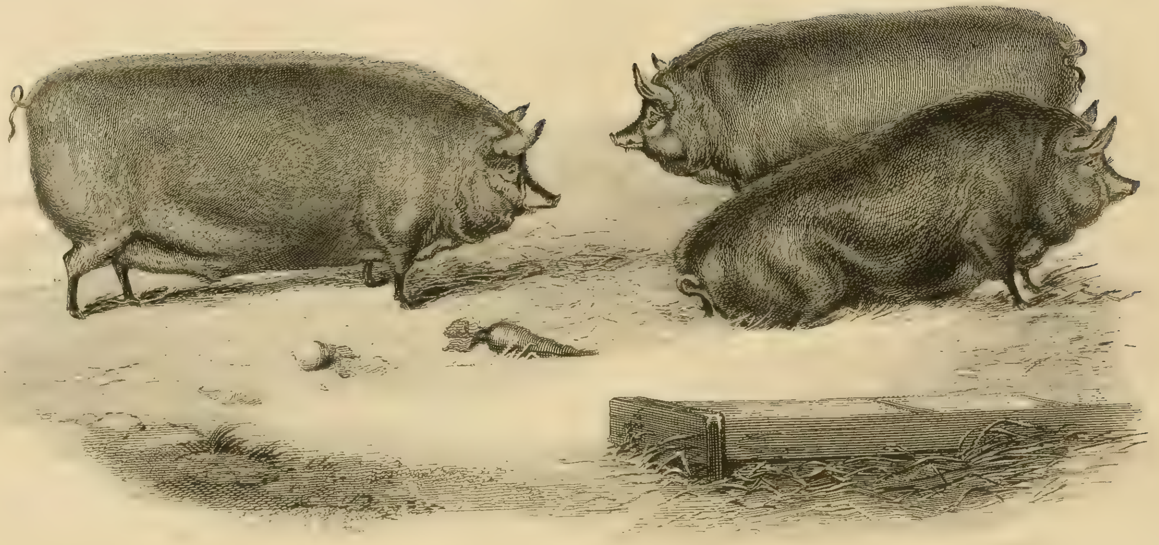
Davis

Beckwith

Three New Leicester Wethers,

Bred and Fed by Mr. Twitchell, of Wellington, Beds, to which a First Prize and Gold Medal were awarded at the Smithfield Club, Decr 1841.

London, Published by Joseph Rogerson, 24, Norfolk Street, Strand, July 1, 1842.



THE FARMER'S MAGAZINE.

JULY, 1842.

No. 1.—Vol. VI.] [Second Series.

PORTRAIT OF MR. BAKEWELL.

We had made arrangements for giving a Portrait of this eminent Breeder in this the first number of the volume. But our engraver, being anxious to do full justice to his subject, has urged us to postpone it until the next month, when it will certainly appear, with a biographical sketch.

PLATE I.

The subject of the first Plate is a Pen of Three New Leicester Wethers, bred by and the property of Mr. Twitchell, of Wellington, Bedfordshire, from rams of the stock of Mr. S. Bennett, of Bickering Park, Beds. Mr. Twitchell exhibited these sheep at the Smithfield Show in December last, and obtained the first prize of £15, a silver medal as the breeder, and the gold medal for the best Pen of Long-woolled Sheep. The excellence of Mr. Bennett's flock is well known, so that Mr. Twitchell had good materials to work upon, but great credit is due to him as a young man and a young breeder, he having been so eminently successful on his first appearance as an exhibitor at Smithfield, the arena in which the veterans meet in competition.

PLATE II.

The Pigs, the subject of our second Plate, were bred and fed by W. F. Hobbs, Esq., Mark's Hall, Essex, and are called the "improved Essex breed." One of these Pigs obtained the first prize, another a second prize, and the third as extra stock was highly commended, at the Christmas Show of the East Essex Agricultural Society, in 1841. This breed of Pigs is highly approved, and we understand Mr. Hobbs has a constant demand for all he can spare.

REVIEW.

1. *Chemistry in its Applications to Agriculture and Physiology.* By Dr. Justus Liebig. Edited from the MS. of the Author, by Dr. Lyon Playfair. 2nd Edition. London. 1842.

2. *Three Lectures on Agriculture.* By Dr. Daubeny. Oxford. 1841.

3. *Lectures on Agricultural Chemistry and Geology.* By Professor Johnston. Parts I. and II. London. 1842.

Chemistry is a science of recent creation. It has made wonderful progress within the present century, and rendered itself eminently useful to all departments of national industry; but, hitherto, agriculture has derived little benefit from its advancement. The laws of vegetable nutrition are too recondite to have made much progress in the infancy of a science.

Davy was the first who turned his gigantic mind to the improvement of scientific agriculture. But he undertook a task which could not be accomplished by all the aids of the chemistry of his day. His researches were useful in pointing out a path which might afterwards be pursued with profit; but they went little further.

No fault, however, can be ascribed to that illustrious chemist, as the chemistry of vegetables was then unknown. This new science has sprung into existence within the last few years, and owes, in a great measure, both its origin and present position to the indefatigable exertions of the celebrated Professor Liebig. It is well known that this chemist has for some time devoted his talents to the discovery of the laws of vegetable nutrition. The work which heads our article contains the fruits of his labours. Since its publication, an impetus has been given to scientific agriculture, and several of our own chemists have devoted their energies to its advancement.

Dr. Daubeny, the justly esteemed professor of agriculture at Oxford, has been foremost in enlisting in the ranks; and Professor Johnston, of Durham, soon followed his example. Both these chemists, taking as a basis the discoveries of the German professor, have applied to their elucidation and extension their more practical knowledge of detail. But, although it is candidly admitted, that to Dr. Liebig is due the fundamental doctrines from which they have proceeded, we would form a very erroneous estimate of their labours were we to view them merely in connection with his.

Many of Liebig's views are open to discussion, and have not been adopted by the British chemists now alluded to, who have substituted for them theories of their own. Although we have at various times referred to the works now before us, we have not done so with a view to lay before our readers the different aspects in which the grand laws of vegetable nutrition have been viewed. At a time when farmers grasp with so much avidity at the new information which chemistry unfolds to them, we consider it of the first importance that they should be furnished with the means of judging of the respective values of the various theories propounded for their acceptance. With this view, we will endeavour to examine in detail a few of the most important laws connected with the nutriment of plants, as described in the works of Professors Liebig, Daubeny, and Johnston. Plants, like animals, must be supported by food. A seed is sown in the earth; it germinates, and produces a plant, which is often many thousand times larger than the seed from which it sprung. This increase in size can only be produced by the reception of nutriment under one form or another. There are obviously only two sources whence this nutriment can be derived. It must either be furnished by the soil, or by the air, or by both together.

The first great question, then, in examining the laws of vegetable nutrition is, what constitutes the food of plants, and whence is it derived?

Although this question involves the very foundation of all the laws of vegetable physiology, it is very remarkable that a great diversity of opinion still exists amongst chemists regarding the proper answer which should be returned to it. This is so much the more remarkable, as the number of substances supposed to exercise any influence on the growth of vegetables is exceedingly small. We know that the organic part of plants consists of carbon, hydrogen, oxygen, and nitrogen. We shall, therefore, consider the sources from which each of these elements is furnished to vegetation.

Many vegetable physiologists and organic chemists conceive that the carbon of plants is, in a great measure, if not entirely, derived from a carbonaceous substance existing in soils, to which the name of *humus*, or *humic acid*, has been applied. This substance is more familiarly known to us under the term of "*vegetable mould*." It is described by Liebig as "a brown substance easily soluble in alkalies, but only slightly so in water, and produced during the decomposition of vegetable matter by the action of acids or of alkalies."

But before vegetable mould can act as nutriment for plants, it must acquire solubility; for—

"Both the cold of winter and the heat of summer are destructive of the solubility of humic acid, and at the same time of its capability of being assimilated by plants."—Liebig, p. 15.

Water itself is not sufficient to render humus soluble, although water impregnated with alkaline matters does possess this power. Alkaline bodies always exist in soils, but in such minute quantity, that they exercise very little effect on the solubility of its humus. When good soil is treated with water, this fluid dissolves only $\frac{1}{100000}$th part of its weight of vegetable matter. Hence it is evident that a very small portion could thus enter into plants.

It has been found that all rain water contains ammonia—a substance in which humus readily dissolves. This indeed is the only manner in which we can suppose it to acquire solubility; for we find that even the alkaline salts contained in soils render soluble only a trace of vegetable matter.

We know that infusions of certain colouring matters are absorbed by the roots of plants, and that therefore—

"Organic substances can enter into the roots, and thence into the circulation of the plant."—(Johnston, p.88.)

Undoubtedly this conclusion is perfectly correct in itself, but it does not bear out the argument of its author, that the humus in the soil is also absorbed by the roots. For the assumption is entirely gratuitous, that the humus is in a *soluble* state whilst in the soil.

"The advocates of the importance of humus as a nourishment for plants have found in the ammonia of the atmosphere an explanation of the manner in which it acquires its solubility, and, therefore, its capability of being assimilated by plants. Now it is very true that humic acid is soluble in ammonia; but the humic acid of chemists *is not contained in soils*. Were it so, on treating mould with water we should obtain a dark coloured solution of humate of ammonia; but we obtain a solution entirely devoid of this acid. It cannot be too distinctly kept in mind that *humic acid* is a product of the decomposition of *humus* by means of alkalies.

"Again, if the coloured solutions of humates of ammonia, lime, or magnesia be poured upon good mould, or decayed oak wood (which is nearly pure *humus*), and allowed to filter, the solutions are observed to pass through quite colourless; they are decolourized, just as if they had been filtered through charcoal. Here, then, *humus* possesses the property of extracting *humic acid* from water; or, in other words, soils have the power of rendering humic acid insoluble or unfit for assimilation."—Liebig, p. 75.

From this we learn that there is not even the slightest evidence that humus exists in soils in a soluble state. The *onus probandi* that it does so rests with those who advocate its importance. Until this is proved, there is in fact no scope for argument. Dr. Liebig might, therefore, have declined discussing the question more fully: but he has not done so. On the contrary, for the sake of argument, he has admitted the solubility of humus, and shown what an insignificant fraction of the carbon of plants, even on this supposition, could be derived from it. His conclusions are most convincing and masterly, but we must refer the readers to the work itself, as they could not be curtailed with fairness to the author.

"In attempting," says Liebig, "to explain the origin of carbon in plants, it has never been considered that the question is intimately connected with the origin of humus. It is universally admitted that humus arises from the decay of plants. No primitive humus, therefore, can have existed; for plants must have preceded the humus. Now whence did the first vegetables derive their carbon? and in what form is the carbon contained in the atmosphere?

"These two questions involve the consideration of two most remarkable natural phenomena, which by their reciprocal and uninterrupted influence, maintain the life of the individual animals and vegetables, and the continued existence of both kingdoms of organic nature."—Liebig, p. 20.

This refers to the invariable composition of the atmosphere. A certain amount of carbonic acid exists in air, and neither increases or diminishes in sensible proportion; yet it is found that plants assimilate its carbon, and liberate its oxygen. Hence, if there were no means by which carbonic acid is returned to the air, a sensible diminution must ensue; but this gas is constantly expired by animals in very considerable quantity.

"If," says Johnston, "we suppose each inhabitant of Great Britain, young and old, to expire only 80lbs. of carbon in a year, the twenty millions would emit seven hundred thousand tons; and allowing the cattle, sheep, and all other animals to give off twice as much more, the whole weight of carbon returned to the air by respiration in this island would be about two millions of tons, or the quantity abstracted from the atmosphere by four millions of acres of cultivated land."—p. 223.

The carbonic acid thus furnished to the atmosphere is in reality that which was abstracted from it by growing plants. This will be apparent when we consider that the greater part of vegetable food is converted by the processes of digestion and respiration into carbonic acid and water. Thus the grand object of vegetation is to abstract the carbonic acid from the air, and form from it food adapted to the nutrition of animals; whilst they, on the other hand, again convert this food into its original form. Plants in decaying are likewise converted into carbonic acid and water. If, then, we could conceive that all the vegetable matter which did not serve for the nutriment of animals suffered complete decay, and that all the nutriment of animals was again changed into its pristine form, a balance would thus be struck betwixt animal and vegetable life, and the amount of carbonic acid in the air would remain constant. But only a portion of the food of animals is again returned to the air; the remainder is retained in the substance of their bodies. It is true, that at their death, it again assumes its elastic condition; but the aggregate of animal life is not always the same. Dr. Daubeny has very ably argued that this circumstance forms an objection to the theory that vegetable life is entirely dependent for subsistence upon that of animals.

"There can be little doubt, that within the area embraced by culture the amount of nutritious matter goes on increasing with the care bestowed upon the land, and that the number of animals maintained is in consequence proportionably increased."—Daubeny, p. 96.

An additional portion of carbon is retained during the life of these plants and animals. If this carbon be not obtained from sources extraneous to animals and vegetable life, "the vegetation, as well as the amount of animal life, in regions which continue in a state of nature will decrease in proportion to the increase of those brought under subjection to man."—Daubeny, p. 97.

Dr. Daubeny, therefore, feels inclined to believe that the food of plants is derived, in a great measure, if not entirely, from volcanic sources. How much food may be derived in this way, it would be difficult to ascertain. In a few cases, the amount of carbonic acid evolved from certain localities has been determined with considerable accuracy. Bischof has estimated the quantity of this gas evolved from the volcanic district of the Eifel at not less than 100,000 tons, containing 27,000 tons of carbon. With reference to this, Professor Johnston has the following excellent observations:—

"Yet though absolutely large, the quantity of carbonic acid disengaged in this way from the earth is really small when compared either with the entire quantity supposed to be present in the atmosphere or with that which is required for the growth of the yearly vegetation of the globe. Suppose that from a thousand spots on the earth's surface a quantity of carbonic acid equal to the above estimate of Bischof escapes continually into the air, the weight of carbon (27,000,000 of tons) thus diffused through the atmosphere would be only equal to that which is yearly drawn from the air by 54,000,000 of acres of land under cultivation, and only twice as much as that contained in the coal which is annually consumed in Great Britain alone."—Johnston, p. 232.

The above calculation, which we conceive is not too low an estimate, admits only 27,000,000 of tons as furnished by volcanic sources. But man alone furnishes to the air every year no less than 100,000,000 tons of carbon: and the other animals inhabiting the globe must furnish an infinitely greater amount than this. Hence we draw the conclusion that volcanic agencies are only the means of supplying the deficiency of food retained by plants during life; but that they are not the primary sources of food.

But there is still a mightier means of restoring to the air carbonic acid. We have seen, that it was only by the progress of society and civilization that an increase was occasioned in the aggregate of animal life. In the same degree as civilization advances, the use of coal is extended. Coal in burning produces carbonic acid; and the amount consumed in Great Britain in one year "is sufficient to supply food for the crops that grow upon seven eighths of the arable land of this country."—Johnston, p. 226.

Although we confine ourselves in this article to consider only the food of plants, and the sources whence it is derived, we cannot avoid stating the manner in which these extraneous supplies of carbon are regulated so as to prevent any accumulation in the atmosphere. In former periods of the earth's history, the carbonic acid of the air appears to have been present in larger quantities than now:—

"But a certain period must have arrived in which the quantity of carbonic acid contained in the air experienced neither increase nor diminution in any appreciable quantity. For if it received an additional quantity to its usual proportion, an increased vegetation would be the natural consequence, and the excess would thus speedily be removed. And, on the other hand, if the gas was less than the nominal quantity, the progress of vegetation would be retarded, and the proportion would soon attain its proper standard."—Liebig, p. 29.

We have thus seen reason to believe that the carbon of plants is supplied by means of carbonic acid, but rarely, if ever, by the assimilation of humus. We may have occasion in a future article to show that the latter body is really useful to plants after having suffered decomposition.

We shall now proceed to consider the sources of the nitrogen of plants.

With regard to the manner in which nitrogen is furnished to the vegetable kingdom, considerable diversity of opinion exists. It will, therefore, be necessary for us to consider this subject in detail. In fact, its proper determination is a subject of great practical importance, as the theory of the application of manures depends, in a great measure, upon it.

Until a few years since it baffled the ingenuity of vegetable physiologists to account for the manner in which plants receive their nitrogen. In the case of cultivated plants, no difficulty existed, as nitrogen is abundantly contained in the manures which are applied to them. But the lichen and the moss grow upon bare rocks, which do not contain a particle of nitrogenous matter. Experiment did not warrant the conclusion that the nitrogen of the air exercises any influence upon vegetation. This led the sagacious Liebig to suspect that the air contained some peculiar nitrogenous compound which had escaped detection from previous experimenters. Rain water is evidently the vehicle by which this compound must be brought to the earth. Accordingly, Liebig examined rain water, and detected the subs'ance of which he was in search.

"Experiments," says Liebig, "made in the laboratory of Giessen with the greatest care and exactness have placed the presence of *ammonia* in the atmosphere beyond all doubt. It has hitherto escaped observation, because no person thought of searching for it."—p. 75.

Ammonia, or as it is more familiarly known, hartshorn, is a compound of hydrogen and nitrogen. It is a product of the decay of all animal and vegetable bodies, and of the effete matter of the animal economy. In fact, the peculiar odour which is possessed by atmospheric ammonia attests its origin; for Liebig informs us that—

"It is worthy of observation that the ammonia contained in rain and snow water possesses an offensive smell of sweat and putrifying matter—a fact which leaves no doubt respecting its origin."—p. 76.

Can anything be more exquisitely beautiful than the laws here developed? We have already seen that the carbon of plants is derived from carbonic acid, which gas is expired from the lungs of animals during life, and is a product of the decay of their bodies after death.

"Carbonic acid, water, and ammonia contain the elements necessary for the support of animals and vegetables. The same substances are the ultimate products of the chemical processes of decay and putrefaction. All the innumerable products of vitality resume after death the original form from which they sprung. Thus also the complete dissolution of an existing generation forms the means for the production of a new one, and death becomes the source of life."—Liebig, p. 89.

Such are the views of the German professor, and they certainly possess the merit both of beauty and simplicity. His elegant fabric has, however, been assailed by the hands of the two English professors whose works we have also under consideration. But, in our opinion, it is built on too firm a foundation to be easily overturned. We shall, therefore, examine, in all fairness, the weapons which have been directed against it, as well as the impression which they have made.

Dr. Daubeny conceives that a presumption exists in favour of the view, "that every particle of carbon as well as of nitrogen which enters into the constitution of the plants and animals either now existing, or which have existed since the beginning of time, may have been originally evolved from the interior of the globe."—Daubeny, pp. 92, 93.

Liebig himself admits that the ammonia which existed at the dawn of the creation of organic beings must have been of inorganic origin.

"This ammonia," says Liebig, "has not been produced by the animal organism, but existed before the creation of human beings, being a part, a primary constituent, of the globe itself."—p. 109.

"Where," asks Johnston, "has this ammoa existed durng all past time—from what deep caverns of the earth does it now escape?"—p. 232.

In the lagoons of Tuscany, in Castel Mora, and Cherchiago, nay, in the vicinity of all active and of many extinct volcanoes, the professor will find it now escaping; and if he examine the ammonia contained in the primitive schists, he will cease to consider that Liebig "assumes a very doubtful position, when he asserts that it existed before the creation of human beings."—Johnston, p. 236.)—All the primitive argillaceous schists contain traces of ammonia, and were deposited at a time not only before the creation of human beings, but antecedent to the appearance of organic life.

It is, therefore, certain that ammonia existed in the atmosphere prior to the formation of animals and vegetables. Dr. Daubeny assigns a cause for its presence in volcanic operations. It is very probable, as Daubeny supposes, that the volcanoes of former times may have acted with superior energy to those now existing; in which case a large amount of ammonia may have been emitted into the atmosphere. But we deny that there is any proof that the ammonia necessary to support the vegetation of the present time is derived from volcanoes. By such an arrangement, unless by direct especial interpositions of Providence, the amount of vegetation on the globe would constantly be fluctuating, and the balance betwixt animal and vegetable life would be destroyed. For volcanoes are so uncertain in their operation, that at one time a superabundance of ammonia might be emitted into the atmosphere, whilst at another a great deficiency might exist. Nor could the invariable quantity* in the atmosphere depend upon such varying causes. Nature could not have left the great kingdom of organic life under the sway of an adventitious cause. Again, we have seen that in the case of carbonic acid, the quantity evolved by volcanoes was insignificant; nor have we the slightest evidence that the ammonia is evolved in comparatively greater quantity. Hence we see no reason to depart from our conclusion, that although the ammonia necessary for the food of primeval plants may have been evolved from the interior of the earth, still there is no proof that volcanic agencies are so active now as to furnish the ammonia employed by the present vegetation.

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* The quantity is invariable within certain limits, although it fluctuates slightly between these.

Professor Johnston considers that ammonia does not play such an important part in the economy of vegetation as the two learned chemists, Liebig and Daubeny, ascribe to it. By various chemical processes, ammonia may be converted into nitric acid. This body, in Johnston's opinion, exercises a considerable influence on vegetable life; and he upholds that "over the general vegetation of the globe it holds with ammonia at least an equal sway, and is appointed to exercise at least an equal influence over the growth of plants, both in their natural and in their cultivated state."—p. 246.

The fact that nitric acid exists in the air, under certain atmospheric conditions, was established (we believe) by the German professor. But we are not aware that either he or any other chemist ever thought of ascribing to it a general influence on the vegetation of the globe. The merit of doing so rests, therefore, with Mr. Johnston. As this view forms the most original part of the work now before us, it will be interesting to inquire on what data it is founded, and whether these data are sufficient to warrant the conclusions deduced from them by the professor.

In Liebig's theory of the manner in which ammonia is returned to vegetation, a sufficiency for the purposes of plants would always be furnished were there no exhausting causes in operation. "But," Johnston very properly observes, "of the ammonia thus formed, a portion is daily washed from the soil by the rains, and carried to the sea, and much more probably is washed from the air by the waters of the sea itself, or by the rains which fall directly into the wide ocean;" but we cease to agree with him, when he adds—"and we know of no compensating process by which this ammonia can be restored to the air, and again made useful to vegetation."—p. 235.

We refer the professor to his own account of the manner in which the carbonic acid thus lost is compensated to vegetation (p. 226), in order to show that by the very same means the ammonia also is restored. The sentence to which we refer, we formerly quoted, the substance of it being that the coal consumed in Britain in one year is sufficient to supply food for the crops that grow on seven eighths of the arable land of this country. This food consists not only of carbonic acid, but contains also a proportionably large quantity of ammonia. We may refer our readers to the ammoniacal water obtained from the gas works, and now so extensively used as a manure, or to the ammoniacal contents of common soot, in proof of the verity of our assertion.* Now Professor Johnston has very ably argued that the food thus restored (in the case of carbonic acid), is quite sufficient to restore that which is lost; how then can he possibly deny the compensation in the case of ammonia also? But besides this, there is still another means of compensation in volcanic operations. To these we have formerly adverted.

But strange to say, although the Professor "knows of no compensating process," in two pages further he furnishes us with a whole array of processes hitherto unrecognized; by which, according to his own words (p. 238), an "indefinite quantity" of ammonia is reproduced. It is highly important to ascertain what these processes are.

First, he asserts, on the authority of Berzelius, that when organic substances *containing no nitrogen* are oxydised in the air, "ammonia is not unfrequently *formed*." That ammonia is frequently *found* there can be no doubt, but it is equally certain that it is never *formed*. All organic substances in decaying (or oxydising) form a carbonaceous mass, which possesses a remarkable power of absorbing ammonia from the atmosphere. This ammonia being detected in the decaying substances was supposed to be a product of the decay, but since its true scource has been pointed out, this erroneous idea has been wholly abandoned.

We confess to have felt some surprise in reading the following inconclusive reasoning of the Professor. We will state it in full. He adduces as proofs of the production of ammonia in nature, that—

"When inorganic substances" (*certain* inorganic substances should have been said) "are oxydised in the presence of air and water—as when moist iron filings are exposed to the air (Cherallies), or when certain oxydised substances are decomposed in the air by means of potassium (Faraday), or when metals, such as tin filings, are rapidly oxydized by means of nitric acid—ammonia is also produced in variable quantity. *Hence the absorption of oxygen, even by the inorganic substances of the soil, may give rise to the formation of ammonia.*"

The italics are ours, not the Professors. Here we have three premises—one erroneously stated, and the other two without the most remote analogy to the question; and yet what a bold conclusion has been drawn! The one which we consider to be erroneously stated is of course not wilfully so, but owing to a misapprehension. Ammonia is not *produced* but *absorbed* during the oxydation of iron. The Professor may satisfy himself of this by a very simple experiment. Take powdered hematite or common peroxide of iron, heat it to redness and expose it for some weeks to the air (it may be perfectly free from moisture), and ammonia may be detected in the oxide. We have done the same with soils, and found them to absorb ammonia in like manner from air dried before being admitted. The other two facts brought forward are instances of refined chemical action, which from their singularity have attracted the attention of chemists, but do not bear the most remote analogy to the question at issue.

"But," continues Mr. Johnston, "the fact which most clearly illustrates the production of ammonia in nature, both on the surface of the earth in the soil, and far in the interior near the seat of volcanic fires, is this—that if a current of moist air be made to pass over red-hot charcoal,* carbonic acid and ammonia are simultaneously formed. This is in reality only a repetition in another form of what takes place, as above stated, when vegetable matter decays, or iron filings rust in moist air. The carbon and the iron decompose the watery vapour of the air, and combine with its oxygen, while at the instant of its liberation, the hydrogen of the water combines with the nitrogen of the air, and forms ammonia" (pp. 237, 238).

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* We are aware that part of the nitrogen of coal is given out during combustion in its elementary form, but ammonia is also evolved in considerable quantity.

* We presume that the Professor has omitted to add the words—*and iron.* Without the addition of iron, no ammonia could possibly be produced; for

We presume this to be an original experiment, as no authority is quoted. It is well known that an element at the moment of liberation, *in statu nascens*, is very prone to enter into combination. Dr. Daubeny made some beautiful experiments to combine nascent hydrogen with nitrogen, but without success. (See Daubeny's lectures, p. 101). The experiment recounted by Johnston would, therefore, be very favourable to his views, were there not a fallacy in the *modus operandi*. The fallacy to which we refer is *that all charcoal contains ammonia.* And it is singular that the Professor did not guard against this source of error, as he was perfectly aware of the fact; for he informs us (p. 68) that ammonia "is absorbed in large quantities by porous substances, such as charcoal, which, as already stated, absorbs 95 times its own bulk of ammoniacal gas." He must, therefore, have known that ammonia would absorb it from the air.

We know of a justly esteemed professor, whose name we have not authority to mention, who repeated the experiment as detailed by Johnston, and actually obtained *traces* of ammonia. In executing the experiment a second time he left out the air altogether, and merely passed over steam with precisely the same result! We could refer to other experiments, but do not consider it just to Mr. Johnston to bring them forward in an anonymous article; and we have mentioned this one instance of failure more with the intention of enabling the professor to know that the conditions for success are not sufficiently detailed, and to request him to state them more fully, than with a view to the refutation of the experiment.

It has been perfectly necessary for us to consider thus in detail the processes which are asserted to produce "an indefinite quantity of ammonia." For had they really been in operation, the balance betwixt animal and vegetable life, so strongly insisted upon by Liebig, would have been thrown in considerable doubt.

Although we have shown that compensating processes are in operation to restore the ammonia of organic matter lost to vegetation, we have now to consider the arguments upon which Mr. Johnston concludes that nitric acid "holds with ammonia at least an equal sway" (p. 246.)

In a subject of so much importance as this, the natural course of the enquiry would appear to be, that proof should first be given that nitric acid is ever decomposed, and its nitrogen assimilated by plants. The position is highly questionable in the opinion of every chemist, except Mr. Johnston; who appears to consider it in the light of an axiom so self evident, that no proof is required. The only vestige of evidence which he adduces is contained in the following extract:—

> "In regard to the action of nitric acid upon vegetation, it is known—
>
> "1. That when in the form of nitrate of soda, potash, &c., it is spread upon the soil, it greatly promotes the growth and luxuriance of the crop, and increases its produce; and
>
> "2. That, when other circumstances are favourable to vegetation—as in certain districts in India—the presence of an appreciable quantity of these nitrates adds largely to the fertility of the soil" (p. 239.)

But these familiar facts prove only that *alkaline nitrates* are favourable to vegetation; they in nowise show that *nitric acid* is so. Most chemists are of opinion that the favourable influence of nitrates is due to their alkaline constituents, and not at all to the nitric acid; although there are others who hold an opposite opinion.

We are well aware that Mr. Hyett found a larger proportion of nitrogenous matter in wheat grown with nitrate of soda, than in that grown without. But this only shows that conditions were furnished for the full development of the plant. These may have consisted in the supply of an alkali, and not necessarily from that of a body containing nitrogen.

We do not deny that nitric acid may have influence on vegetation; we only wish to point out that the question is yet far from being decided. In assuming it, therefore, as the basis for a theory, Professor Johnston has gone far beyond what he has a right to do in the present state of agricultural chemistry.

But let us assume the question as settled on the view most favourable to the theory of the professor, and follow out his arguments to show the general diffusion of nitric acid throughout nature, so as to enable it to "hold with ammonia at least an equal sway."

The only state in which uncombined nitric acid has been found in nature, is in solution in the rain of thunder storms.

> "In the rain which fell during 17 thunder storms," says Johnston, "Liebig found nitric acid always present, and generally in combination with lime and ammonia. *In the rain which fell on sixty other occasions, he could detect it only twice.* In minute quantity nitric acid is difficult to detect. How much then must be formed in a thunder storm, even in our climate, to make the presence of this acid always appreciable in the rain that falls; how vast a quantity in those warmer climates, where such storms are so frequent and so appalling!" (p. 241.)

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hydrogen is not set at liberty. The products in this case are carburetted hydrogen and carbonic oxide, a partition of the elements of water taking place. The omission is, however, important, when we consider the conclusion deduced by Mr. Johnston from the experiment. This is, that the ammonia evolved from volcanoes is due to the passage of air and steam over red-hot combustible substances. But when we consider that a metallic substance capable of decomposing water must also come into play, the union of the conditions become much more improbable. Professor Johnston performed the experiment in a gun-barrel, and must be fully sensible that the only free hydrogen which he procured was obtained by the decomposition of the steam by the heated iron. When the experiment is performed in a glass tube, no hydrogen whatever is liberated, even though air be present; carburetted hydrogen and carbonic oxide being the sole products. The only objection which we have is to the general terms of the annunciation of the experiment, which are calculated to mislead; as the words "and iron" a few lines lower, shew that that element was used in the experiment.

The writer of this article, during a recent residence in the burning plains of Hindostan, examined this subject with much care. He collected the rain at the various intervals in a thunder storm, which shook the "city of palaces" to its very centre, and examined the portions separately for nitric acid. In all of them this acid was contained in very appreciable quantity. Rain also collected during a violent thunder storm on the African coast gave equal indications of its presence. In both cases it appeared to be present in considerably larger proportion than in the rain of our own climate. He was anxious, in support of some crude views that he then entertained regarding nitrification, to prove that the nitric acid thus given to a soil was considerable in amount; but he was obliged to abandon the idea. Thunder storms in tropical climates, although comparatively very frequent, are absolutely of rare occurrence, when we consider them with reference to the wants of vegetation. In 58 out of 60 cases of rain unaccompanied by thunder, Liebig could not detect any traces of nitric acid. But the rain of each of those 60 cases would contain ammonia, a substance which is also always present in the rain of thunder storms. Hence we find ammonia constantly present in rain, whilst nitric acid is of rare occurrence, existing only in that of thunder storms; how then can it be affirmed that nitric acid "exercises at least an equal influence over the growth of plants?"

The position is only tenable on the supposition that the nitric acid is derived from other sources than the atmosphere. Professor Johnston proceeds to show that it is so:—

"In regard to the existence of nitric acid, it is not known to form a necessary constituent of any of the solid rocks of which the crust of the globe is composed; but it is diffused almost universally through the soil which overspreads its surface. In the hotter regions of the earth, in India, in Africa, and in South America, it in many places accumulates in sufficient quantity to form incrustations of considerable thickness over very large areas, and in many more it can be separated by washing the soil. Even in the climates of Northern Europe, it is rarely absent from the water of artificial wells, into which the rains, after filtering through the surface, are permitted to make their way" (p. 240.)

In the sentence now quoted, we find a most important assertion, that nitric acid "is diffused almost universally through the soil which overspreads the surface of the globe." Here a mere hypothesis of the professor is brought forward with all the confidence of a well ascertained fact. In a few pages further he considerably modifies the statement by informing us that—

"There is little reason to doubt, indeed, that nitrates are to be found, in greater or less quantity, in *all cultivated* soils" (p. 244.)

And what wide array of facts does the professor bring forward in support of this very general position! It is all summed up in one sentence in the same paragraph, viz.—"Braconnot found nitrate of potash in the botanic garden at Nancy!". It would, indeed, be very important for the professor's theory, that the presence of nitrates in cultivated soils should be established. But this does not warrant him to assume, as a fact, a circumstance wholly at variance with all analysis. Even the analyses of Sprangel, made with such unwonted accurracy, lend no countenance to this idea. And if Mr. Johnston felt convinced of the inaccuracy of all analyses hitherto published, why did he not execute experiments more accurate? When Liebig conceived that the nitrogen of plants was obtained from ammonia, he did not content himself with *asserting* that that substance was present in air, but he *proved by experiment* that it was so. In certain soils, nitrates may and do exist; but it is quite gratuitous to cite these as a proof of their general diffusion "in all cultivated soils." There are whole tracts in India, in which not a vestige of nitrates can be detected in the soil. The formation of nitric acid in soils requires certain conditions, which are by no means universal.

This leads us to consider the views held by Mr. Johnston regarding the reproduction of nitric acid. It is admitted, on all hands, that when ammonia comes in contact with alkaline substances and decomposing matters, nitric acid is produced. But as the professor denies the *reproduction* of ammonia in any considerable quantity, it would not coincide with his views to derive all his nitric acid from this source. He accordingly proceeds to show cases in which nitric acid is formed, in the absence of organic matter to furnish ammonia. They are as follows:—

1. "That certain caves in Ceylon and Kentucky yield abundant crops of saltpetre, although they do not contain organic matter in sensible quantity.

2. "In China," says Johnston, "according to Davis, the old plaster of houses is so much esteemed as a manure, that parties will often purchase it at the expense of a coating of new plaster. Old clay walls, and especially the walls of clay-built huts, are said to be very fertilising to land, when applied as a top-dressing" (p. 244.)

On a subject connected with nitrification, we cannot quote a higher authority than Liebig. This chemist has the following passage in his chapter on "Eremacansis"—

"Now it has been shown in a former part of this work, that ammonia is always present in the atmosphere, so that nitrates might thence be formed in substances which contained no azotized matter. It is known also, that porous substances possess generally the power of condensing ammonia. Thus ammonia, by being a constituent of the atmosphere, is a very widely diffused course of nitrification, which will come into play whenever the different conditions necessary for the oxidation of the ammonia are combined" (p. 311.)

There is not the slightest proof that nitrogen ever unites with oxygen directly under ordinary circumstances. But those who advocate the direct union of nitrogen with oxygen in the nitre beds, must invest it with a power which chemists do not know it to possess. It has been well remarked that—

"When it is observed that the character of a substance remains unaltered in a whole series of phenomena, there is no reason to ascribe a new character to it for the purpose of explaining a single phenomenon, especially where the explanation of that according to known facts offers no difficulty."

Again, we are told that "Kuhlman could not succeed in causing pure nitrogen to combine directly with oxygen, even under the most favourable circumstances"—Liebig p. 308. Liebig accordingly denies that nitric acid is ever produced except through the agency of ammonia. Now although the direct union of the atmospheric elements *in the soil* is a mere hypothesis, contrary to the opinion of many chemists, and unsupported by a single direct experiment; still Mr. Johnston is not restrained from bringing it forward, as a mighty means of reproduction, for he says:—

"But besides the portion of this nitric acid, which owes its existence to the decomposition of ammonia, much—by far the greatest portion in all probability—derives its origin from the union of the elements of the atmosphere itself. This direct union is effected in the *air*, as has already been shown by the agency of atmospheric electricity; but it also takes place in the *soil* during the oxidation of the other elements, contained in the organic matters, which are there undergoing decay" (p. 245).

He here supposes that the decaying organic matter induces or *disposes* the elements of the air to unite. But there are no experiments whatever to prove that this *disposing effect* is sufficient to cause the union of nitrogen and oxygen. The idea is entirely hypothetical, and yet the professor writes as positively as if there existed no doubt about the matter.

Experiment, which is the only safe guide in the foundation of theories, tends to confirm the supposition that nitrification results only through the agency of ammonia. The other theory, regarding the direct union of the elements of air, is not only unsupported by experiment, but is an hypothesis of such a nature, that it is based upon a whole series of other hypothetical assumptions, which may be as visionary as the theory itself.

But we must refer the reader to the quotation regarding the plaster of houses in China. This is brought forward to shew that nitrates have been produced without the agency of organic matter, or of ammonia. The fact is given on the authority of Davis, in whose work we find it thus stated:—"The plaster of old kitchens, *which in China have no chimneys but an opening at the top*, is much valued; so that they will sometimes put a new plaster on a kitchen for the sake of the old."

Fuel in burning generates a quantity of ammonia, which, having no direct outlet, acts on the lime of the plaster, forming nitrate of lime. That this is really the cause of its fertilizing power, is apparent from the value only being attached to the "plaster of kitchens."

In the quotation referred to above, other arguments are deduced from the circumstance of the fertilizing power of the clay of old clay walls. But we have repeatedly had occasion to mention, that all aluminous minerals possess a great absorbent power for the ammonia of the atmosphere; and it is to this and not to the nitrates (in our opinion), that the fertilizing effect is due.

We have been obliged to consider this subject at considerable length, and will, therefore, recapitulate the conclusions to which we have arrived.

1. That it is quite uncertain whether or not nitric acid can be decomposed, and its nitrogen assimilated by plants.

2. That the nitric acid derived from the atmosphere is too small in amount to exercise any general effect on the vegetation of the globe; for this acid only occurs in the rains of thunder storms, or at all events very rarely in ordinary rain.

3. That, contrary to Mr. Johnston's opinion, there are means in operation for effecting the reproduction of the ammonia lost to vegetation.

4. That sufficient evidence has not been furnished, that the nitrogen of the air combines with hydrogen to produce ammonia, in ordinary operations of nature.

5. That the opinion that nitrates exist in all cultivated soils is a mere hypothesis, unsupported by all the most accurate analyses of soils hitherto published.

6. That the supposition that nitric acid may be formed in soils by the union of the elements of the air, involves the assumption of certain characters to the elementary body nitrogen, which are unknown to chemists, and the existence of which would be at complete variance with our present knowledge of that element.

7. That, as far as chemists at present know, nitric acid is never formed on the earth's surface, except through the agency of ammonia; and further, that the theory of its formation by the union of the atmospheric elements, is a mere assumption, not only unsupported by, but directly opposed to, all experiments hitherto made upon the subject.

With respect to nitrification, if we refuse to deal with hypothesis in the discussion of theory, how can we adopt Mr. Johnston's opinion that nitric acid performs at least an equal part with ammonia in sustaining the vegetation of the globe? For, even admitting the general diffusion of nitrates, it is evident that ammonia is still the *primum mobile*, for from it the nitrates are produced. And admitting even that nitrates are reproduced in considerable quantity in tropical climates, still they can only prove of advantage in the immediate localities in which the reproduction is effected, but cannot be of the slightest benefit to the *general* vegetation of the globe. But ammonia, on the other hand, when reproduced by the decay of organic matter and by other causes, assumes a gaseous form, and escapes into the atmosphere—that grand magazine of food, whence all plants derive nourishment.

From what has proceeded, it is obvious that, in our opinion, Professor Johnston has failed to establish his theory, that nitric acid is equally important with ammonia in sustaining the vegetable kingdom. We do not deny that this may be the case in particular localities, but admit even this only as an hypothesis, probable in itself, but which has not yet assumed the form of an established fact.

The great beauty of Liebig's theory of the mutual dependance of animals and vegetables on each other for subsistence is the great merit of simplicity; for, on this view, the vegetable kingdom will always be in a state fitted to administer to the wants of animal life. An increase of animal life will occasion an increase in vegetation; the means for this increase being, in the first place, supplied from the extraneous sources which formerly have been considered.

But, according to the views of Professor Johnston, the food of plants is entirely dependant upon accidental circumstances; should these be impeded in their operation, the vegetation of the globe would suffer, and animal life be in some degree destroyed. Surely the theory which puts the kingdom of organic life beyond the caprice of accident, is to be preferred to that which makes it entirely subservient to adventitious causes.

We have now considered the various opinions entertained regarding the sources whence plants derive their carbon and nitrogen. In doing so, we have endeavoured to state the respective theories as fairly and fully as our space would permit; and when we found occasion to adopt one theory in preference to another, we have candidly stated our reasons for so doing. But though sensible that we have not intentionally omitted any fact materially affecting the theories which we have endeavoured to controvert, still we are afraid that in our endeavours to condense, certain arguments may have been omitted which ought to have been inserted. We, therefore, earnestly request our readers to refer to the works themselves, and form their own judgment on the questions at issue. In all of these three works under consideration, valuable matter will be found. It so happens that in this instance we have been compelled to disagree with the views of Professor Johnston. But we hope at some future time to examine some of his views, in which we entirely coincide with him.

The sources whence are derived the carbon and nitrogen of plants, has given rise to considerable discussion. But with regard to the oxygen and hydrogen, which constitute the remainder of the food destined for the organic part of plants, there is fortunately no diversity of opinion.

Water is composed of the two gases, oxygen and hydrogen. This fluid in circulating through plants is decomposed; its hydrogen, and occasionally its oxygen, assimilated. The hydrogen of plants may also be derived in small proportion from the ammonia furnished to them by rain. With respect to the oxygen also, another source of supply exists. Plants in absorbing carbonic acid give off oxygen, which may in certain cases serve the purposes of the plant.

In this article we have confined ourselves exclusively to the consideration of the sources whence the organic parts of plants derive food, and have accordingly omitted a description of the manner in which this food is assimilated.

BECCLES FARMERS' CLUB.

THIRD ANNUAL REPORT.

In laying before the club the third annual Report, the committee cannot but revert to the unanimity and good feeling which have marked the proceedings of the society from its formation to the present time, and the desire manifested by its members to promote the object for which it was formed, namely, the diffusion of information upon practical agriculture; and the result must be evident, that although theoretical or scientific knowledge is the means by which (when combined with practice) the farmer may be enabled to bring forward improved systems of cultivation, still the practical experience of a considerable period must convince every one that any great deviation from long established practice, too hastily adopted, will often be attended with disappointment and loss, and on this account a prejudice will be raised against any improvement, which if it had been pursued with caution and judgment, might have been found greatly beneficial. The subjects which have engaged the attention of the club during the year have not been numerous, arising from the lengthened discussions which have occurred, and other circumstances recorded in this report.

The committee have endeavoured to draw from the minutes as much of the arguments as they think it necessary to shew the opinions upon which the different resolutions are founded; and they now proceed to submit those opinions and resolutions as they were advanced and agreed to during the successive months.

The meeting in June was principally occupied in the election of officers and members of the committee for the year, and in considering, as had been recommended in the last annual report, the purposes to which the surplus funds of the society should be appropriated. It was resolved that premiums should be offered for the encouragement of sheep-shearers, and also that the committee should be empowered to allow (if any opportunity offered) a certain sum to a competent lecturer upon agricultural subjects. Towards the close of the evening, "The advantages of Clod Burning," was introduced, and after a short discussion postponed until the following meeting in July, when the subject was resumed. Several members were favourable to the practice when applied occasionally upon heavy lands possessing a deep soil, considering that it tends not only particularly to benefit the root crop, but also to improve the quality of corn which follows. By others it was contended that it would decrease the quantity of soil, and in consequence, ultimately prove injurious. After a discussion which proved the subject was but little understood in this locality, on account of the impractibility of its being pursued upon gritty or sandy soils, (of which the neighbourhood principally consists), the following resolution was adopted:—

> Resolved,—"That Clod Burning is beneficial upon deep-soil heavy lands, as tending to improve the quality of the corn, and also being an excellent preparation for the turnip crop, and that such a process may be advantageously performed about once in twelve years."

"The best method of making Fallows," was afterwards introduced. Breaking up the stubble as soon as practicable after harvest, was strongly recommended, either with a skeleton plough or scarifier, by which operation more good would be done than could be accomplished with three ploughings in the following spring, the land being more pulverized, and consequently in a better state for the root crop. Another argument in favour of thus early working the stubbles was that grass or other root weeds were much easier destroyed at that season than at any other part of the year. Lands thus wrought should be stetched up soon after wheat sowing is concluded, or where intended for beet, put on ridges ready for manuring the following spring. On lands intended for long fallows which are not applied to the growth of tares, the month of March or April was the best time for ploughing in the stubbles, using the harrows or roll but little through the summer. It was stated as an objection against late ploughing, that no vegetation of seeds would take place when the land was allowed to remain unstirred through the winter: it was also thought by some that working the lands in the autumn would not be found so beneficial for the turnip crop as when a summer fallow was made; this led to the adjournment of the question until the next meeting, at which a lengthened discussion ensued, when it was proved from the experience of several members that breaking the stubble in the autumn was not injurious to the root crop. The following resolution was afterwards proposed and adopted :—

Resolved.—"That the best method of making fallows for the root crop is to break the stubble up as early as practicable, (after the corn crop is removed) with a skeleton plough, scuffler, or scarifier, putting the land on the stetch or ridge previous to the winter, by which means it will be in a more pulverized state than when ploughed in the spring and the weeds and grasses more effectually destroyed. That in making long fallows, the best time to plough in the land is in the month of March or April, using the harrows or roll as little as possible after the subsequent earths."

At the meeting in August, the attendance of members being small, no discussion took place. The following month—"The cause of the failure of the plant of wheat in the last year," was debated, when the general opinion was, that it arose from the severe frosts, followed by a sudden change to mild and wet weather. Leaving the land rolled after depositing the seed was considered injurious, tending to expose the young plant more than when a rough surface was left. Early ploughing the land was particularly recommended. Some members were of opinion the wire-worm and slug were the cause of the failure of the plant, whose ravages might be accelerated by the lands being in a loose state from the severe frosts. After a long discussion the following resolution was—

Proposed,—"That the original cause of the failure in the plant of wheat in the last year arose from the severity of the frost and the rapid succession of unusually warm weather for the season; that leaving the surface of the land in a rough state after the wheat is put in, and top dressing in the winter with long or short manure will be found a sufficient protection to secure a plant in any season. It was ultimately agreed that the real cause was not sufficiently known for the club to come to any definitive resolution."

In October, the attendance of members was prevented by the extreme wetness of the evening; consequently no discussion could be entered into.

At the November meeting, "The best rotation of crops for arable land in general," was the subject introduced, when, from its great interest and importance, it was thought desirable to take into consideration the rotation best adapted for heavy lands, prior to the discussion of those which would apply to mixed and light soils. For this description of lands the four-course system as usually pursued in Suffolk was recommended, with the exception of long fallows, which were strongly deprecated to the extent hitherto pursued; it being contended by some members that all the wheat stubbles, not intended for beet or turnips, should be planted with tares, either to be consumed by summer soiling with horses, or fed off by sheep upon the land, urging that by this system more barley would be grown than where the surface of the land was exposed to the sun during the summer months. Others were of opinion that without long fallows the land could not be kept clean, and therefore that system was the best. After a variety of conflicting arguments the following resolution was agreed to :—

Resolved,—"That the best method of cropping a heavy land farm of eighty acres of arable, is as follows :—1st. Twenty acres of fallow, one-fourth of which to be grown with beet, one-fourth with turnips, another fourth with tares—the latter to be mown green, or feed off with sheep or cattle, and cleared from the land by the middle of July; the remaining quarter to be a long fallow. 2nd. That barley or oats should be the crop next in succession. 3rd. That clover, trefoil, beans, or peas shall follow, leaving the occupier to plant such proportions as he might think best, having in view that clover, generally speaking, should be planted only once in eight years, and that it is not desirable to sow any artificial grass seeds with barley or oats which immediately follow tares. 4th. The last crop to be wheat only."

"The rotation of crops best adapted for mixed soil farms," was then brought forward; and as for the former description of lands so also for this the four-course system was considered preferable, varying the root crop, as much as practicable, with beet, Swedes, and common turnips. White carrots were considered a desirable root to be grown upon this description of land. One member stated his plan was not to sow more than one third of his spring corn with clover, another third with trefoil, leaving the remainder for beans, peas, or tares; by this system he contended no difficulty would be found in securing a good plant of clover. This was acceded to by the club. The following resolution, embodying the above suggestions, was adopted :—

Resolved—"That the rotation of crops upon mixed soil land should be—1st. Fallow; this to be appropriated in equal proportions to beet, Swedes, common turnips, or white carrots. 2nd. The root crop to be followed by barley or oats. 3rd. Two-thirds of the barley or oats to be sown with clover and trefoil, as before suggested, and the remaining part of the barley or oat stubble to be planted with beans, peas, or tares. 4th. The clover, trefoil, bean, pea, or tare stubble to be followed by wheat. That it is not desirable to plant tares upon a wheat stubble on this description of land."

"The best rotation of crops for light lands," still remained for discussion, and occupied the attention of the club at the meeting in January. It was thought by some members that the only necessary deviation from the system recommended for the last description of land was, that two-year layers would be found to form a better flag for the wheat crop than when ploughed up at the end of the first year; this was thought objectionable in this neighbourhood, from the ravages usually made by the wire-worm upon the wheat crop on old layers. Upon the fallows a proportion of beet instead of common turnips was approved, and it was ultimately agreed that the same rotation was desirable for light as for mixed soil lands, with this slight variation in the root crop.

"The best method of filling up the plant of wheat," was then introduced, when it was suggested where only small spots in a field were found deficient, the most desirable plan would be to plant the same with the dibble; but where a great deficiency existed, drilling would be preferable, covering the wheat with a light harrowing. Golden drop, or any other description of wheat, might be used in February; but when delayed until March it would be better to use Talavera; and if anything is required after this month, barley was recommended for light and oats upon heavy lands.

"The best artificial manures to be applied where the yard manure had not been carried for the wheat on account of the wetness of the late season," was the subject which engaged the attention of the meeting in February. Nitrate of soda was recommended as being found a great stimulant, and several members who had used it were satisfied with the result. By others it was thought an exhausting manure, and therefore not so desirable as rape-cake, which, if drilled between the rows, would be found very beneficial. Soot was also spoken of as a good top-dressing, when it could be procured in its genuine state. One member also mentioned having used malt-cumbs drilled in the same manner as rape-cake, and found them to answer well; but the present high price of all artificial manures was considered a bar to their being used with any great advantage. After a discussion, which was continued through the evening, a resolution to the following effect was adopted:—

> RESOLVED—"That in a season like the present, when so large a portion of the yard manure has not been carted for the wheat crop, the use of artificial manure is desirable. Nitrate of soda is recommended—one cwt. per acre sown broad-cast, at two intervals, the first sowing to take place the latter part of April, and the second about three weeks after. Rape-cake drilled between the rows of wheat, one-third of a ton, and malt-cumbs eight sacks per acre. And soot, if it can be procured in an unadulterated state, at about forty bushels per acre. The latter description of manures (if drilled) ought not to be used later than the last week in March or the first week in April."

The important subject—"The cheapest and best substitute for feeding cattle when the root crop is deficient,' was brought before the club at the next meeting. It was considered bad policy to spend money for oil-cake when our own produce would be found quite as beneficial in fattening beasts, and at the present low price of barley we ought not to encourage the foreigner to our own detriment. Barley, when boiled, had been found a very nutritious food; the consumption of a portion of that crop in this way would leave a smaller quantity to be brought to market, and in consequence a better price for the remainder would be realised. Some members, however, were of opinion that this food would not be found sufficiently forcing for forward beasts; but the opinion of those who had used it was, that it was equal, if not superior, to oil-cake, bean or pea-meal, when given in equal value. A resolution embracing the above suggestions was then agreed to:—

> RESOLVED—"That in any season, on a scarcity of root, it is desirable to make use of our own produce instead of spending money for a foreign production, by which means a less quantity of our own corn would be brought to market, and in consequence a better price obtained. Boiled barley was recommended in preference to any other corn. The proportion of water to a quarter of barley recommended was rather more than a moiety, making the same boil, and allowing it to cool gradually when that process had taken place."

At the close of this meeting it was resolved that a special general meeting of the society should be called on the 20th of April, to consider the propriety of appropriating a part of the funds to the club in offering premiums for the best breeding cattle and sheep.

A general meeting having been called, it was agreed that a sum not exceeding ten guineas should be offered as premiums, and divided in proportions as stated below, to the following classes of stock, to be exhibited, and the prizes awarded, on the day of annual meeting, the 13th of May next.

To the best entire cart-horse ..	Three sovereigns
best cart-mare...	Two sovereigns
best bull	Two sovereigns
best cow for dairy	Thirty shillings
best five breeding ewes..	One sovereign
best tup	One sovereign.

At this meeting, "The best method of keeping farming accounts,". was introduced, and after a short discussion, postponed for further consideration.

The committee would now congratulate the members upon the practical details which have been elicited by the various discussions during the past year, and they feel convinced that by a steady perseverence in the course hitherto pursued by the club, much practical information and many valuable improvements may yet be obtained: the number of members who have joined the society during the past year has been gradually increasing, and the club now consists of 144 members! The committee cannot close this report without congratulating this meeting upon the establishment of a society for the purpose of offering rewards to the most deserving agricultural labourers and servants; they feel confident that this will be considered by every person present as a means of convincing the agricultural population that by a proper deportment and an endeavour to perform their duty in the station which Providence has allotted them, they will meet with a kind consideration from their employers, and a desire on their part to reward good conduct and industrious habits.

On behalf of the committee,
C. GIBSON, Secretary.

LEOMINSTER FARMERS' CLUB.

FIRST ANNUAL REPORT.

The committee of the Leominster Farmers' Club, at the expiration of the first year of the existence of the institution, have now to fulfil the gratifying duty of submitting to their fellow members and the public a short statement of their operations since the management of its interests has been vested in their hands; and this duty is accompanied with the most unfeigned pleasure, since they are able to congratulate you on the prosperous state of the society, not only as to its numerical increase, but also in reference to its extended utility.

Your committee are sensibly impressed with the sentiment, that although, a few short years ago, the British farmer was enshrouded by almost impenetrable prejudices, averse even to the appearance of change, his once lamentably characteristic apathy and dread of innovation, are now gradually and rapidly subsiding, and thus yielding to the influential and beneficial radiance of the sun of science; and not only admitting but inviting his genial and enlivening beams to unite in friendly co-operation with the practical efforts of agriculture, the profession will shortly be elevated to that legitimate rank in the scale of human pursuits, to which its paramount importance so naturally points. Your committee, therefore, cannot refrain from joining in the universal expression of grateful feeling to the first originators of institutions which teem with such national advantages, and simultaneously impart such local benefits.

It is to the efforts of such enterprising and patriotic individuals that your committee, in common with all cultivators of the soil and friends of agriculture, mainly attribute their ability to assert that a new era has happily commenced its dawn upon the agricultural horizon, and it requires but unity of purpose and assiduous perseverance to insure those lasting and unspeakable blessings which must eventually emanate from such laudable, because profitable, associations.

Your committee with great pleasure also refer to the amicable feeling existing between the farmers' club and the Leominster agricultural society, and they venture to express a hope that the only rivalry which may ever exist between the two institutions shall be that of striving to effect the greatest amount of benefit to the cause of agriculture, and thereby advocating the best interests of society at large. Twin sisters of the same parent stock, may they vegetate, flourish, and bloom together, productive of those signal and important services which cannot fail to rank them highly and deservedly predominant in the estimation of those within their immediate influences, and elevate them as examples and beacons for other localities, to profit by the guerdons which practical science combined with British agriculture have commenced to diffuse around them.

Your committee cannot fail to point attention to the circumstance that the institution has been joined by many respectable and influential gentlemen of the town and neighbourhood, and they trust that as the objects of the club become more fully known, and its principles more extensively circulated, a still greater amount of practical assistance, both pecuniary and scientific, will yet be received from those who though not engaged in an agricultural capacity, have, nevertheless, always evinced a friendly disposition to its best interests.

To the agriculturists of the neighbourhood who from motives peculiar to themselves, have declined at present joining our ranks, your committee may be pardoned if they exceed the province assigned them in thus appealing to those individuals, and urging them not longer to withhold the counsel and skill it may be in their power to impart to others less initiated in the mysteries of their calling; and your committee think they can use no more emphatic or persuasive application than the words employed by the prophet, "Give ye ear and hear my voice, hearken and hear my speech. Doth the ploughman plough all day to sow? doth he open and break the clods of his ground? when he hath made plain the face thereof, doth he not cast abroad the fitches and scatter the cummin, and cast in the principal wheat and the appointed barley, and the rye, in their places?"

Let them not from circumscribed ideas or illiberal feelings, be longer tempted to confine that within their own breast which an all-wise and beneficent Creator has imparted unto them, but be entreated henceforth to forward their own interests as well as those of their friends around them; and to assist in promoting by every means in their power the enlightenment of their agricultural neighbours and the benefit of the locality in which they reside.

Without longer detaining you with prefatory remarks, your committee will proceed at once briefly to review the origin and succeeding occupations of the club, and the subjects which have been discussed during the past year. At the suggestion of a few individuals a meeting was announced by advertisement to take place on the 23rd of March, 1841, which was very numerously and respectably attended, when several resolutions were passed, and the club was considered as fully established. A provisional committee was then appointed to make the necessary arrangements, form a code of regulations for the management of the society and the library to be connected therewith, and report their progress on the 26th of the same month.

On the 2nd of April, the adjourned meeting was held at the King's Arms Inn, when the rules and regulations as previously prepared by the provisional committee were read and unanimously adopted.

The meeting then proceeded to elect the officers and committee of management for the year.

It was afterwards resolved that the next general meeting of the club should take place on the 8th of April.

THE FIRST MEETING FOR DISCUSSION.—The subjects for discussion at this meeting as proposed at the previous one, were—

1st.—The comparative merits of the different varieties of barley cultivated in this neighbourhood. After an animated and rather lengthened discussion as to the comparative merits of the "chevalier" and best descriptions of the common barley, it was resolved—That the early varieties of the common barley are to be preferred for cultivation in this locality for the following reasons: "that though the maltsters prefer the chevalier barley, there is difficulty in procuring it good, in consequence of its requiring so light a soil. That it does not usually produce a greater bulk of straw than the common varieties; that unless it be well harvested there is great difficulty in piling it. That the produce of corn is not greater above one year in four than that of the common varieties; and, lastly, that it does not ripen so soon by ten days or a fortnight."

The second topic of discussion at the meeting, was, "The best mixture of seeds to form a biennial pasture on light and heavy soils." The following mixtures were unanimously approved:—

1st.—Light soils (for grazing).—1 bushel Ruck's meadow grass; 8lbs. white clover; 3 or 4lbs. ribbed grass; 3 or 4lbs. trefoil.

2nd.—Light soils for mowing.—1 peck Ruck's meadow grass; 6lbs. cow grass; 6lbs. white clover; 3 or 4lbs. ribbed grass; 3 or 4lbs. trefoil; to be mown only once.

3rd.—Heavy soils for grazing.—1 bushel Ruck's meadow grass; 6lbs. cow grass; 6lbs. white clover; 3 or 4lbs. trefoil; 2 or 3lbs. plaintain or ribbed grass.

4th.—Heavy soils for mowing.—1 peck Ruck's meadow grass; 6lbs. cow grass; 6lbs. white clover; 3lbs. trefoil; 2lbs. plantain or ribbed grass; to be mown once.

It was also resolved "that cow grass is preferable to red clover.

Second Meeting.—The subject for consideration at this meeting was—"The best method of preparing land for vegetable crops." The vegetables referred to were turnips, mangel-wurzel, and potatoes, as being those principally cultivated in this neighbourhood. For these crops the club very strongly recommended DEEP ploughing; the in-fallowing to be given as early as convenient after the removal of the preceding crop; the twy-fallowing should be performed in March, at which season many of the members had advantageously used the subsoil plough. The second twy-fallowing was considered to be best at the latter end of April or beginning of May. The scufflers, harrows, and rollers were recommended to be used as often as necessary from the first twy-fallowing till the formation of the drills. It was stated that the manures most used in this neighbourhood are farm-yard manure, bone-dust, and compost.

The club then resolved that the first of these applied to light soils should be infallowed at the season above named, (that is) soon after the removal of the preceding crop, and that not less than two and a half tons per acre should be used; that if bone-dust be employed, it should be drilled in with the seed, and if applied without farm-yard manure or compost, not less than a ton per acre is required. That in case of compost being used, it may be put upon the land either before or after the second twy-fallowing. It was also the unanimous opinion that lime does not add to the weight of any vegetable crop, but that it considerably enhances the mealy quality of potatoes.

It was generally admitted, too, that it might be advantageously spread over turnips, soon after the plant appears, as some protection against the fly, wireworm, &c., and materially improves the tilth of the land for succeeding crops.

With respect to heavy soils, the club agreed that farm-yard manure should be put into the drills; as any other method of applying it was considered as uncertain in its effects. That compost may be employed at the same seasons as on light soils, but bone-dust was not recommended for heavy soils. The meeting next proceeded to consider "The best description of Swede turnip, the proper distance for planting, and the best time for doing so." On the first part of the subject it was resolved that the Ashcroft produces the greatest weight per acre, of any kind known in this neighbourhood; but having so small a top, and consequently being deprived of that protection which a larger top necessarily imparts, it was recommended that the crop should be taken off the land previous to the commencement of the frost. Skirving's improved purple-top was also recommended to the notice of the club.

As regards the distance of planting, a space of from 24 to 27 inches between the drills was thought should be generally left; the latter being preferred when farm-yard manure is used, as being more convenient for carting it on.

For potatoes, it was advised that the distance should be increased to 30 inches between the rows.

It was then decided, that from the middle of May to the middle of June is the most proper time for planting Swedes; the state of the weather being of course taken into consideration.

Third Meeting.—The subject discussed at this meeting was, "The most proper time for cutting and the best and cheapest method of making and securing hay and clover." On the first part of the subject it was resolved, "That the proper time for cutting meadow grasses is before the seed has arrived at maturity." By attention to this resolution it was concluded that the quality of hay would be much superior, and the aftermath (which is considered one of the most fattening herbages for most descriptions of stock) would be considerably more abundant.

It was next resolved that clover and other artificial grasses, when cut for hay, should be mown when the heads appear in full blossom, but rather sooner than later. The method of making hay being so generally understood, it was thought unnecessary to enlarge upon the subject. The task work was however recommended by the club, and a general approval of hay-making machines expressed by a majority of the members. Hay barns were also strongly recommended not only for their cheapness but for their convenience, it being believed that they prevent too great an excess of fermentation, and do not require the hay to be so effectually made.

Fourth Meeting.—The comparative merits of reaping and mowing corn, and the proper time for cutting was the subject selected for this evening's consideration. It was considered that as mowing wheat had not been extensively practised in this neighbourhood, the club could not justly decide upon its merits. It was however resolved that the present system of bagging is far superior to reaping:—first, because the work is done in less time; second, an increased quantity of straw is obtained, consequently a proportionate increase of manure; third, that in a wet season it is not only less injured, but from the sheaves being loosely tied, the air circulates freely through them, the corn is sooner fit to cart, and the quality is in every respect as good as reaped wheat; fourth, that the land is ready for tillage immediately afterwards. In reference to barley and oats it was resolved, that mowing with a cradle has the following advantages:—first, it leaves a cleaner stubble; second, it saves the expense of repeated turnings in unfavourable weather; and third, that the sample of corn is much superior.

The club then took into consideration the proper time for cutting corn. For wheat it was resolved—"That the corn should be in a raw state; or when the straw which at a distance may appear green, but when closely examined is found to be approximating to yellow, and the grain itself when separated is soft and pulpy, but not in a milky state."

Advantages.—1st. That a greater weight of corn is afforded, and that it is of a very superior quality. 2nd. The straw contains more nutritive matter. 3rd. There is a better chance of securing the crops and a saving in doing so; the waste usually attending cutting and moving corn when in too ripe a state being thus avoided.

It was then resolved that barley should be cut with the red row upon it.

Advantages.—1st. It will work more mellow, sprouts quicker in the couch, and makes more malt, and of a superior quality. 2nd. The straw when cut as above will be better for fodder, and possesses more nutriment than when allowed to become quite ripe.

As to oats, it was admitted that when they are cut ripe the corn will be much plumper and better, but in point of economy it was recommended that they should be cut in an unripe state, thereby saving a greater quantity of corn, and the straw being more valuable as fodder.

With reference to pulse the meeting was unanimous that no improvement upon the old system had been introduced.

Fifth Meeting.—"The cheapest and best plan of collecting hops," came under discussion at this meeting.

From statements produced on the first part of the subject it was proved that the average expense of picking by the day, at the rate of one shilling per day for grown persons (including drink), amounted to 11s. 8¼d. per cwt. This was the average of the years from 1831 to 1839 inclusive, omitting the year 1838. The year 1838 being a failure, the expense attending the collecting of the crop was so great that it is not included in the average. The cost of picking by the bushel was shown to average from 5s. 6d. to 6s. per cwt., including the allowance of drink, the price varying from 1d. to 2d. per bushel, dependent of course upon the season and growth of the hop. It was therefore resolved, "That picking by the bushel is decidedly the best method; and is more beneficial both to employer and picker." It was also resolved that cleanliness is more likely to be ensured owing to the constant surveillance of the person employed as overlooker and measurer.

In discussing the second portion of the subject, "The best method of curing hops," it was resolved that after picking no time should be lost in placing them on the kiln; and that sufficient time should be allowed for the steam to subside before turning them the first time.

Proper attention was also recommended to the ventilation, and that it should be a sufficient height above the kiln to prevent the possibility of condensation, and the steam returning upon the hops instead of passing off altogether. On this subject the meeting were unanimously of opinion, that the kilns in general use in this district are constructed upon such a principle, that even with the greatest care and minutest inspection, a good sample of hops cannot be produced, consequently that the growers of hops in this locality labour under great disadvantages in comparison with planters in other districts, for the above reason.

Sixth Meeting.—First—The best variety of wheat for cultivation in this neighbourhood. Second—The best method of preparing the seed. Third—The proper time for sowing.

Second subject. The comparative merits of drill and broad-cast husbandry as applied to wheat.

The subjects of this meeting were adjourned, and will be again resumed when a communication has been received from the Royal Agricultural Society respecting Professor Henslow's report on the different varieties of wheat.

Seventh Meeting.—The harvest and busy season now occurring, no discussion took place.

Eighth Meeting.—In consequence of the show of the agricultural association, this meeting was adjourned.

Ninth Meeting.—The subject proposed for discussion, was, "The best method of storing turnips."

The majority of the members were of opinion that the following simple method, as having been generally practised might be safely recommended, and would secure the crop for use as long as they are required in the spring. The turnips should be carted to a dry situation, and placed to the depth of six feet or upwards, in a pyramidal form, thus—Λ, and well covered with refuse straw, fern, or croppings of hedges; the object of the covering being not so much to protect them from wet as from frost, as it was the opinion of many of the members that wet is not injurious to them—or they may be placed against a pleached hedge and covered, as before recommended.

It was resolved, "That the same method as observed respecting Swede turnips could with safety be adopted in reference to common turnips."

Tenth Meeting.—The first subject proposed for discussion was "The best and cheapest method of keeping farm horses." But from circumstances it was agreed that it should be adjourned till the next meeting.

The second subject for the evening's consideration was "The best method of fattening neat cattle, sheep, and pigs, in the winter." The Club considered it necessary to look to the quality of the animals; as those which are well bred possess superior qualities, and a greater aptitude for fattening. The price, too, of the different articles consumed should be taken into account With respect to neat cattle the attention of the meeting was directed to the very able remarks of C. Hillyard, Esq., author of a "Summary of Practical Farming and Grazing;" and the following plans recommended by him were considered worthy of adoption:—1st, 10½ bushells turnips; 1¾ cwt, of hay. 2nd, 10½ bushels turnips; 1½ cwt. cut and uncut hay; ½ bushel meal. 3rd, ½ bushel linseed; 3 gallons meal; 1¼ cwt. cut and uncut hay; 10½ bushels turnips. 4th, 21 oil cakes; 3 gallons meal; 1½ cwt. cut and uncut hay; 10½ bushels turnips.

The following was also submitted by a member, and was generally approved:—1st feed, hay. 2nd, cut turnips, half a bushel. 3rd or mid-day, one pint flax seed, ground with the same quantity of bran, and one quart barley meal, mixed with half a bushel of chaff. 4th, ½ bushel turnips. Supped with hay.

It was also resolved, "That the comfort of the animals so far as regards cleanliness, proper temperature, and regularity of feeding, should be particularly attended to; and that this applies to every description of stock.

Second. Sheep.—Resolved "That sheep fatten faster when confined in a yard; and that they thus afford a greater increase of valuable manure."—Resolved also, "That their food should consist of cut turnips, a proper mixture of corn (split peas being preferred), and a proportionate quantity of cut hay; and that they should be regularly supplied with a portion of rock salt".—It was also agreed "That oil cake, if the price will admit, may be given with great advantage."

Third. Pigs.—A difference of opinion existed as regards the best method of feeding pigs, but the most prevalent impression was that ground corn is far preferable to any thing else. It was resolved "That steamed potatoes may be advantageously used with ground corn."

Eleventh Meeting. On this occasion there was a full attendance of members, and the subject of "The best method of keeping Farm Horses" was resumed. After an animated discussion, the meeting strongly recommended that horses should be kept in well ventilated buildings, and that, as in all stock, particular attention should be paid to cleanliness—several calculations were laid before the Club, but the most approved was the following, which the meeting were informed emanated from the Monmouth Farmers' Club, and which in that neighbourhood is now generally adopted.—⅔ wheat straw, ⅓ hay or clover, cut into chaff; 1 bushel of oats weighing 40lbs. if under 4s. per bushel.

Now—valuing the corn at 4s.; straw at 2*l.* per ton, 2s. 5d.; hay or clover 3*l.* per ton, 1s. 9¾d; makes a total of 8s. 2¾d. per week for each horse, allowing 35lbs. every 24 hours. Another calculation from a member showed that a full sized cart horse consumed on an average 52lbs. of hay or clover per day, which valued at the same rate, the weekly cost for each horse would be 9s. 7½d., thus leaving a balance in favour of cut food of 1s. 4¾d. per week for each horse. It was also resolved, "that the animal was less likely to be affected in the wind, and that his general condition when kept on cut food is greatly improved."

These are a digest of the various subjects which have occupied the attention of the members throughout the year.

The members are also informed, that a special committee has been appointed to effect the establishment of a registration office, for every description of servants and labourers, and that arrangements are made to open the office on the 25th of March next.

A committee has also been appointed to edit a herd book for individual use, and they only wait for communications to the secretary to enable them to complete their duties.

Your committee beg also to announce to you, that they have examined the treasurer's accounts, and have found them in a satisfactory condition.

On resigning the trust reposed in them during the past year, your committee beg to assure you that although retiring from the official duties connected with the Institution, their zeal and best wishes for its continued prosperity are in no degree abated, and they feel confident that under judicious management, the same success which has attended their efforts, will be realized by the exertions of those upon whom the duties of a committee may devolve during the ensuing year. They cannot, however, close this report without alluding to a subject which it would indeed be ungrateful of them to omit.

The valuable services of your president must not pass by in silence and unnoticed. He has exercised the most unwearied diligence in pursuit of the best interests of this institution, and of agriculture generally—he has evinced his anxiety in its welfare by the most assiduous attention, and unremitting punctuality, at the same time fulfilling the duties of his office with that impartiality, which in such a situation it is indispensably requisite to be observed. Your committee consider themselves happy therefore in the opportunity thus afforded them to record their grateful sense of his past services, and they would also indulge the hope that the beneficial effects of those services may long be extended to, and felt by, the Leominster Farmers' Club.

(For the Committee,) T. Comfield Revis,
Gordon House Academy,
Honorary Secretary.

INGESTRE RAM SHOW.

This meeting took place on Thursday, the 2nd June; and a more gratifying scene of the kind could not be witnessed in any part of the kingdom. The rams were exhibited in an inclosure not far distant from Ingestre Hall, and a capacious marquee screened the company from the rays of the sun. Earl Talbot was, as usual, present, and appeared in the best health and spirits. We also observed amongst the company, the Earl of Dartmouth, Lord John Beresford, the Hon. Mr. Petre, Sir Joshua Walmsley, Viscount Ingestre, M.P., the Hon. and Rev. A. C. Talbot, the Hon. and Rev. William Talbot, the Hon. Captain Talbot, — Soames, Esq., of London, Thomas Hartshorne, Esq., Charles Wicksted, Esq., John Brown, Esq., of Lea Castle, John Davenport, jun., Esq., the Rev. C. Landor, the Rev. Mr. Topham, the Rev. J. W. Hillyard, Thomas Gilbert, Esq., of Cotton Hall, C. J. Allsopp, Esq., and William Worthington, Esq., of Burton, John Yates, Esq., of Colton, R. Hanbury, Esq., of Millford, R. C. Chawner, Esq., of Wall, W. Stubbs, Esq., of Weston Hall, and others of Lord Talbot's tenantry, Mr. Buckley, of Normanton, and his son, Mr. John Ashdown, Mr. Yates, of Packington, Mr. Bond, of Draycott, Mr. Wedge, of Somerford, Mr. Dicken, of Colton Hall, Mr. Perkin, of Field, and many other practical agriculturists and yeomen. The arrangements for the Show were very complete. The rams were led into the marquee singly for inspection; and certainly, though not ourselves great judges in such matters, we could not but be struck with the singular beauty of these far famed Leicesters, which seem to be brought as near perfection as possible. They had been clipped in such an admirable manner that one would have supposed the work one of nature rather than art. The quickest eye could not detect the slightest mark of the shears. With all our partiality for Welsh scenery and Welsh mutton, we could not but be reminded on this occasion of the infinite disparity between the diminutive and scantily fed sheep we had met with in the principality and these fine specimens of English breeding and feeding—a contrast as great as the barren mountains of Merionethshire present to the rich pastures of Ingestre. The "letting" is conducted very quietly; and the prices are not made known, though we understood that for some of the finest 50*l.* or 60*l.* were obtained, and in one instance we believe 70*l.* was given. Upwards of thirty were exhibited; and between twenty and thirty were let at the time. After the principal rams had been let, many of the company visited different parts of the farm; and but one feeling was expressed, that of admiration at the fine style in which every operation of husbandry is conducted at Ingestre. Among the stock which attracted attention was an extraordinary ox, not three years old, of gigantic size, and promising to make one of the finest beasts ever seen. He had not been taken from the pastures many months, and he has only been fed upon hay, cut grass, and occasionally a few crushed oats. Two Suffolk punch entire horses, of a dark chesnut colour, one seven and the other four years old, were much admired.

THE DINNER.

The greater part of the company afterwards assembled, by invitation of Earl Talbot, in the fine old baronial mansion of Ingestre, and to whom the magnificent drawing-room and library were thrown open. About half-past five, the company were ushered into the dining-room, when about seventy sat down to enjoy the elegant hospitality of their noble host: his lordship evidently experiencing as high a degree of gratification as any of his guests. Lord Talbot presided; supported by Lord Dartmouth, Lord John Beresford, Sir Joshua Walmsley, &c., &c. Here was a scene of which Englishmen may justly make their boast. No other country in the world could present its counterpart. Noblemen, gentlemen, and yeomen of various grades were here assembled; the latter participating not as serfs of the bounty of a feudal baron, but as honourable and enlightened Englishmen, of the generous hospitality of one whose public worth and private virtues add lustre to the dignity derived from high descent and exalted official station. But when Lord Talbot meets a company of British farmers, their attachment to a common pursuit creates a spirit of harmony and good fellowship which it is delightful to witness, whilst no sacrifice is made of dignity on the one hand, or of independence on the other. This was pre-eminently the case on the present occasion. After dinner, Lord Talbot gave the usual loyal toasts; that of "The Queen" being proposed with a most feeling and appropriate reference to the recent diabolical attempt on her Majesty's life; his lordship afterwards inviting the company to drink the health of their sovereign with three times three, and they responding most enthusiastically to the call. To the toast of "the Army," Capt. Talbot replied in a brief speech, which, for its excellent sentiment and eloquent language, was much applauded. To the toast of "the Navy," Lord Ingestre replied in appropriate terms, as he also did to that of "the Members for the County." To the toast of "the Bishop and Clergy," the Hon. and Rev. A.C. Talbot responded, alluding in a most becoming strain of sorrow and sympathy to the serious illness of the bishop. Lord Talbot, in proposing "Prosperity to Agriculture," observed that under existing circumstances, it was a difficult and delicate task to discuss many questions affecting the agriculture of the country. Great differences of opinion prevailed on these questions; but on one subject there could be no disunion, and that was on the importance of agriculture as a national interest, and on the necessity of adopting every possible improvement. It was desirable that they should all aim at perfection; and he thought that ultimately perfection in agriculture would be attained, and that now we were on the high road to it. The times certainly demanded that every conceivable improvement should be adopted *(Hear, hear)*. The toast having been drunk with applause, Mr. Hill said a single word was quite unnecessary in proposing the health of their noble host, "Earl Talbot;" and so it proved, for the mention of the noble Earl's name elicited a succession of cheers which seemed to us almost to give additional animation to the countenances in the ancestral portraits which adorn that noble old dining room. The toast was drunk with three-times-three and "one cheer more;" and, on the call of Mr. Yates, with "another cheer for the farmer's friend!" his lordship said, in reply, much as he appreciated their applause, he valued more than it the title with which Mr. Yates had been pleased to honour him; for he considered that the farmers were the strength and sinews of the country *(Cheers)*. Lord Talbot proposed the health of "Earl Dartmouth and the Staffordshire Militia," and his lordship suitably acknowledged the compliment After "the Yeomanry" had been drunk, Lord Talbot proposed "the Yeomen of the county—not the military, but the farmers," and Mr. Yates, (of Colton) was called upon to reply. Mr. Yates expressed a very decided opinion that agriculture was but in its infancy; and predicted that we should live to see the day when we should not want foreign corn, but be quite independent of foreigners: by industry and perseverance, he had no doubt that British farmers would ultimately drive the foreigner out of the market *(Hear, hear)*. Lord Talbot proposed the health of "Mr. Tollet" in the warmest terms of friendship and esteem. He regretted exceedingly the absence through advanced age of that gentleman, who, for a period of 40 years, had cheered him by his example and instructed him by his counsel, and who had during that period never been found wanting in those qualities of integrity, kindness, and goodness which distinguished his character *(Applause)*. The toast was acknowledged by Mr. Wicksted. The toast of "Mr. Meynell Ingram and his fox-hounds" was proposed by Lord Ingestre, who called upon the Rev. Mr. Landor to reply to it. The rev. gentleman, after observing that his age had compelled him reluctantly to abandon the chase, spoke in terms of high eulogy of the character of Mr. Meynell Ingram, and also ably vindicated the amusement of which that gentleman is so distinguished a supporter and patron. Lord Talbot proposed the health of "Mr. Hill, the assistant chairman of the Quarter Sessions," and that gentleman acknowledged the compliment. The Rev. W. Talbot proposed "the Magistrates of the county," and Mr. Davenport replied. Lord Talbot after some commendatory remarks on coursing, proposed "the leash," coupling with it the names of Mr. Chawner and Mr. C. Allsopp. The health of Lady Sarah Ingestre was proposed by Lord Dartmouth, and most gallantly drunk in three-times-three: Lord Ingestre returned thanks. The health of "the clergy of Ireland" was responded to by Lord John Beresford. "The farmers of Derbyshire" was proposed by Lord Ingestre, who coupled the names of Mr. Hartshorne and Mr. Worthington with the toast. Mr. Hartshorn replied. Lord Ingestre proposed "the commercial navy, and the health of Mr. Soames." Mr. Soames replied. Lord Talbot, who spoke in high terms of Mr. Buckley as an honourable man and an eminent breeder of sheep, proposed his health, which was acknowledged by Mr. Buckley, jun. The health of the hon. and Rev. W. Talbot, vicar of Ombersley, was drunk with much warmth of feeling, and replied to by that gentleman. The health of the Rev. Mr. Topham was acknowledged by that gentleman in an able speech, in which he dwelt on the importance of chemistry and some of the other sciences to agriculture. The last toast from the chair was, "to our next merry meeting." During the evening, some conversation took place respecting Mr. Pratt's show of rams at Newfields occurring on the same day as the Ingestre show, and a change was suggested, as likely to add to the interest of both shows. It was ultimately announced, that in future the Ingestre show would take place on the first Tuesday in June.

The company retired highly delighted with the interesting proceedings of the day, and with the great urbanity and kindness displayed by Earl Talbot and the other noble members of the family present.

His lordship gave several of the party present on Thursday an invitation to view his farm at Birchwood Park on the following day.—*Correspondent.*

ON THE IMPROVEMENTS WHICH HAVE TAKEN PLACE IN WEST NORFOLK.

By the Right Hon. Earl Spencer.

(From the Journal of the Royal Agricultural Society of England).

Every one connected with agriculture in this country, and probably in Europe and America, has heard of the improvements in the agriculture of West Norfolk, brought about by the exertions, liberality, and example of the Earl of Leicester. It is known that it is his boast, as it well may be, that he has converted West Norfolk from a rye-growing to a wheat-growing district. That this statement is well-founded, is proved by the fact that the small ports of Blakeney, Cley, Wells, Burnham, and Brancaster, which, when Lord Leicester came into possession of his estate, and for many years afterwards, constantly imported a large quantity of wheat, have become exporting ports, and that now for many years a great deal more wheat has been exported from them than has been imported into them, and this has occurred notwithstanding the great increase of population which has taken place, and consequently the great increase in the consumption of wheat which must have occurred in the district, which those ports used formerly to supply.

These are striking facts: they cannot be denied, nor can they be accounted for in any way but by the improvement in the cultivation of the soil which has taken place. They are not only interesting to those who are practically engaged in agricultural pursuits, but they are also interesting to the philosopher, because they prove, that, although the general principle must be admitted to be true, that population will press upon the means of subsistence, yet to a certain point at least the skill and industry of man may counteract this tendency, and supply a greatly increased population, not only with the same, but with a much better description of food from the same district.

It has appeared to me, that it would be interesting to our society, not only to state these results, but to endeavour to point out the means by which they have been produced; and with this view I have made the best inquiries I could from Lord Leicester, the only person now living who is able to recollect the former state of this district, and to tell the means by which it has been improved into its present flourishing condition.

Lord Leicester came into possession of his estate in the year 1776. At this time the whole district round Holkham was unenclosed, and the cultivation was of the most miserable character; the course of cropping, as long as the land would produce anything, was three white crops in succession, and then broadcast turnips; no manure was purchased, and very little, and that of no value, was produced on the farm. The sheep were of the old Norfolk breed, and, with the exception of a few milch cows, there were no cattle kept upon any of the farms.

It happened that the lease of a large part of the land, which now forms Holkham Park, was within two years of its expiration. In the lease previous to the one then current, this land had been let at 1s. 6d. an acre; in the then current lease it had been raised to 3s.; Lord Leicester offered to the tenant to renew it at 5s., but Mr. Brett, the tenant, who deserves to have his name recorded for the great good he unintentionally did to the country, refused to give so much for the land, upon which Lord Leicester determined to take it into his own hands. Thus the real origin of the great improvement of this district was, that Mr. Brett refused to give 5s. an acre for land, which now, under an improved sytem of cultivation, usually produces nearly four quarters of wheat per acre. For nothing would have been much more improbable than that Lord Leicester, then an extremely young man, fond of and excelling in field-sports, with a princely fortune, should have applied himself to the detailed management of a farm, had he not been compelled to take this tract of land into his own hands by the refusal of Mr. Brett to accept the terms which were offered to him. But having taken it, he found, as every man who will apply himself to agriculture will, the high interest of the pursuit, his taste was formed, the habits of his life accommodated themselves to it, and applying the whole energy of his mind to the collection and dissemination of all the knowledge which he could derive from practical and scientific farmers, he has effected the great improvements which, while they have been a source of continued happiness to himself, have produced the most incalculable benefits to the country. If, on the other hand, Mr. Brett had accepted the terms offered to him, Lord Leicester would have granted him a lease for twenty-one years, and for that long period of time, and probably much longer, no improvement would have taken place; West Norfolk would still have been considered a district in which wheat could not be grown, and, what would have been a still greater misfortune, Lord Leicester might never have turned his attention to agricultural pursuits.

The lease having thus expired in 1778, Lord Leicester commenced farming. He was, however, necessarily ignorant of any of the knowledge necessary to conduct the management of a farm. But he took the only means which could give him the information he required; he began at once to collect around him practical men, and invited to his house annually a party of farmers, at first only from the neighbouring districts; at these meetings agricultural topics were discussed, Lord Leicester's farm was examined, and his management of it either criticised or approved, and by thus receiving information, and again communicating it to others, not only did Lord Leicester himself arrive at the knowledge of agricultural management, but the practical men who attended these meetings left them better informed than when they came. In the course of time, friends of Lord Leicester came from a distance to attend them, and thus ultimately this small beginning expanded into the far-famed Holkham sheep-shearing.

As one of the first consequences of these discussions, he adopted a somewhat improved course of cropping; instead of growing three white crops in succession, he only grew two, and kept the land in pasture for two years in every course. This change appears gradually to have improved the land, and I find from the old accounts of the farm that wheat was first sown upon it in 1787. This improved course of cropping, though quite essential, was not of itself sufficient to enable him to grow wheat. The land, naturally very weak, was still more impoverished by the exhausting treatment it had received. In order to get it into better condition, it was absolutely necessary greatly to increase the number of live stock which had hitherto been kept upon it; but the production of food for them was so small, that it was impossible at first to adopt this mode of improvement to any great degree. The first thing to be done was the purchase of manure. Lord Leicester was induced to try rape-cake as a top dressing, and it answered admirably. Another much more effective source of fertility was adopted, and to a much greater degree than it hitherto had been. The surface-soil of the whole district is a very light sand, but nearly throughout it there is a stratum of rich marl at various depths underneath. Pits were opened, and the marl dug out and laid upon the surface. This not only increased its fertility, but gave to the soil the solidity which is essential to the growth of wheat. By these means clover and other artificial grasses were raised, and the power of keeping more live stock was obtained.

As has been said, the only live stock then kept were the Norfolk sheep, there were no cattle. Lord Leicester made no change in the sort of sheep, and adopted Mr. Bakewell's Leicester breed of long-horned cattle. This, indeed, was the only breed of cattle to the improvement of which at that time any attention had been paid, and a young man applying himself to improved agriculture would naturally have been led to select them. When, some time afterwards, he found that the Norfolk sheep were a very unprofitable sort, the same reasons induced him to try the new Leicester breed, a variety of sheep probably as ill calculated to succed on such a soil as the one he occupied as any breed which he could have selected. He at last found that the best sort of sheep he could adopt were the Southdowns. In this, however, as in every other of his farming experiments, Lord Leicester acted with great caution, and did not make the changes which he did make till thoroughly convinced by practical experience that they would answer. Accordingly, for several years he had upon his farm at the same time Norfolk sheep, new Leicesters, and Southdowns: he also tried the merinos, but he did not persevere long with them. I find that so late as the sheep-shearing of 1812 there were still at Holkham both Norfolk and Leicester sheep. Since that time Southdowns have been the only sort which he has kept.

With respect to cattle he persevered with the Leicester long-horned breed for many years; but somewhere towards the close of the last century, Francis Duke of Bedford, with whom he lived on terms of the greatest intimacy, being aware that he was inclined to try the Devonshire cattle, in consequence of the success of a small experiment which he had made in feeding some Devonshire oxen bought from Lord Somerville, bought at the late Lord Ossory's sale a Devonshire bull and some heifers without having had any commission from Lord Leicester, and sent them to Holkham. Upon trial this breed proved to be by far the best breed that could be adopted in such a soil as that of Holkham. Lord Leicester, therefore, gradually replaced the long-horned by increasing his stock of Devonshire cows, but, as in the case of the sheep, some of the long-horned cattle were still to be seen at Holkham as late as 1812: from that time the only cattle which he has bred have been Devons, and the only sheep Southdowns. These latter, however, he has of late years crossed with the Hampshire Down sheep, and he considers that this cross has been very successful, by giving greater strength to the constitution of the sheep, by increasing the value of the wool, and by giving a larger proportion of lean meat in the carcases.

It is not, however, to cattle and sheep only that Lord Leicester has turned his attention: a large portion of the manure produced upon his farm is owing to the number of pigs which he kept. The Suffolk breed of pigs has always been one of the most valuable in the kingdom, but Lord Leicester has found that, by crossing them with the Neapolitan breed, a much more profitable sort is produced. The pure Neapolitan pigs, though their meat is superior to that of any English pig, are such bad breeders, that they are not advantageous to a farmer, but when crossed with the Suffolk their constitution and breeding qualities are greatly improved, and the cross-breed continues to possess the extraordinary aptitude to feed of the Neapolitan without the weakness of their constitution.

Having thus, by keeping animals of a thrifty and profitable sort, increased greatly the number of his live stock, and by the purchase of rape-cake and the application of marl, in addition to the increased quantity of manure which his live stock produced, improved the fertility of the land, he overcame the difficulty of growing wheat, and he adopted the present Norfolk course of husbandry. The farm at Holkham assumed the appearance of fertility which it has since ever held, and attracted the attention of every one at all interested in the improvement of agriculture. The stock upon this farm, and still more the annual exhibitions of the sheep-shearing, proved the great superiority of the Southdown over the Norfolk breed of sheep, the latter were abandoned rapidly by the neighbouring farmers, and now in the whole tract of country between Lynn and Holkham such an animal as a Norfolk sheep is not to be seen. The Norfolks have been entirely superseded by the Southdowns. Of late years indeed it has become very much the custom both with the farmers generally and also with Lord Leicester himself, to put a portion of their Southdown ewes to a long-woolled ram, the produce from this cross having proved extremely profitable, but still in all cases the store flock continues to be of the Southdown breed. With respect to cattle the example of Lord Leicester has not been so universally followed. The polled Suffolk or Norfolk breed still hold their ground. But though his example in keeping a breeding herd of Devon cattle has been followed only to a limited extent, yet the more important object of carrying a large quantity of stock upon their farms is universally attended to by the Norfolk farmers. The nature of the soil and the scarcity of old pasture is such, that no improvement can be made in cattle by summer-grazing, but all the farm-yards are well stocked during the winter. By this system a large quantity of valuable manure is produced, and the occupiers of this light and weak soil are enabled to cultivate it to advantage. A very small proportion, however, of this stock is bred in Norfolk.

There is scarcely any situation where it would be advantageous to a farmer to breed all the cattle which he fattens, although I am confident, from practical experience, that it would be advantageous in the best grazing districts to breed a considerably larger proportion than is now done. But in Norfolk, if any large proportion was bred, much of the advantage of carrying a numerous herd of cattle during the winter would be lost. It is perfectly well-known that the more nutritious the food is on which cattle are fed, the better is the manure produced: it is therefore of great importance that the number of cattle preparing for the market should bear a large proportion to that of those kept in a store and growing state. It is, therefore, in a soil like that of Norfolk of peculiar importance that much the greater number of the cattle on the farm should only remain on it while they are feeding on the most nutritious food. No difficulty is found in effecting this object; for this district, on which at the commencement of Lord Leicester's career scarcely a head of cattle could be found, has now become the centre of attraction for drovers from every part of the United Kingdom. Devonshire, Scotch, Lincolnshire, and I believe even Irish cattle crowd the fairs throughout the county of Norfolk, and most certainly Norfolk now supplies more than its full share of the beef consumed in the metropolis.

This is the present improved state at which Norfolk has arrived; but in order to trace some of the other main causes of this improvement, it is necessary to go back to the latter end of the last century.

When Lord Leicester had proved by his own practice that wheat might be profitably grown, he endeavoured to persuade the neighbouring farmers to follow his example, but it was nine years before any of them did so: at last the late Mr. Overman, whose skill and ability are well known, made the attempt with perfect success, and from that time the old system fell into disrepute, and the present Norfolk agriculture gradually replaced it.

But any attempt to grow wheat would have been an entire failure as long as the farmers persevered in growing three crops of white grain in succession. The land had been usually let on leases of twenty-one years, the occupying tenantry consequently had full security that they themselves would reap the benefit to be derived from any outlay of capital which they made, or any improvement in agriculture which they introduced; but they were so ignorant of their true interests, that they would not forego the apparent immediate profit of growing corn as long as the land would produce it, although it is perfectly clear that, taking the whole period of their leases into consideration, they were enormous losers by pursuing this course. The leases contained no covenants, and the tenants were at perfect liberty to cultivate their land in any way they thought proper. Lord Leicester however, having proved by his own experience, and having also been convinced by the information which he had received from the best practical farmers with whom he was in communication, that a better course of cropping would be greatly to the benefit of the occupying tenant, while it would permanently improve the value of his estate, determined to introduce covenants as to the mode of cultivation into all the leases which he granted. Although in the first instance the covenant only prevented the tenant from growing more than two crops of white grain in succession, yet so great was the ignorance of the farmers, that he met with great difficulty in enforcing even this very modified improvement of the old system.

At last, however, he succeeded. The effect even of this alteration was such, that it proved how disadvantageous to all parties the old system had been; and upon the late Mr. Overman taking a farm of Lord Leicester, he was allowed to draw the covenants of the lease himself. He then inserted the modern improved course of cropping well known as that best adapted to light turnip lands. This lease has been the model on which Lord Leicester's leases have since been drawn, making of course any changes which the peculiar nature of each farm may require. The tenants make no difficulty now about agreeing to adopt the covenants inserted in their leases. The able and skilful farmers whom Lord Leicester has been enabled to collect around him know full well that the course of husbandry enforced by the covenants in their leases, while it is the most advantageous for the improvement of the property of their landlord, is the most profitable for themselves.

I have thus, in an imperfect and superficial manner, stated the course of the improvements which have taken place in West Norfolk. The results are, as I stated in the beginning of this paper, most interesting and important; the means by which they were brought about very simple and plain, and at first sight apparently inadequate to have produced such effects. As the first of these means, I would put the circumstance of a man in Lord Leicester's station applying himself practically to agriculture, and giving an example by his own practice of what might be effected by the skilful application of resources within the reach of all farmers of ordinary capital. But this example would have had but small effect had it not been for the periodical assemblage of men of intelligence, of practical experience, and of enlightened views, to compare the results of their various systems, to discuss their respective merits, and to criticise their respective defects. This assemblage took place at the Holkham sheep-shearing: Lord Leicester was there ready to try any experiments the probable result of which was likely to be advantageous; he was ready to listen to any suggestions, and to report upon the results at some subsequent meeting. This liberality, not only in the prizes he offered, but in the magnificent hospitality of these meetings, congregated men from all parts of the civilised world. None but agricultural subjects were discussed: on these the most conflicting opinions were freely given, and as freely canvassed, but everything political was excluded; and thus, although the political opinions of Lord Leicester and of most of his personal friends were not only very decided, but for a great period, and that the most brilliant era of the Holkham meetings, unpopular with the great majority of those connected with the landed interest, yet men of every shade of political opinion were heartily welcome, and confident that, although they might hear some favourite theory of farming ridiculed, they never would find anything hurtful to their political feelings advanced. The sheep-shearing of 1822, indeed, was an exception; political topics were then introduced—it was a bad omen. This sheep-shearing was the last. By means of these discussions the correct theory of agriculture was improved and made known; by theory I mean, what it always should mean, the combination of the results of the best practice in various circumstances; not the fanciful schemes of clever but unpractised projectors, well informed perhaps on other subjects, but deriving the data from which they deduce their plans from the speculation of their own minds, and not from the results of practical experiments. But though the theory was thus made known, its practical effect would have been little upon the improvement of West Norfolk had it not been proved to be right by the experience of men engaged in the cultivation of the district itself.

This was effected by the well-considered covenants introduced by Lord Leicester into his leases. Long leases are advantageous if properly regulated; they give the tenant a security, which he cannot otherwise obtain, that he will reap the benefit of any outlay of capital which he may make upon his farm: but long leases existed in West Norfolk when its agriculture was in the wretched state which I have described. A prejudiced or an ignorant occupier will gain nothing by having a lease; and an unprincipled one, though sufficiently skilful, may leave his land so deteriorated in value, by an exhausting system, at the end of his lease, that it will be without value to his landlord, and unproductive of any benefit to the country, for years after the lease has expired. For this reason it is that the combination of judicious covenants with his long leases has enabled Lord Leicester to effect such great impovement not only on his own estate, but, by the example thus set, to the whole district in which he resides.

Covenants, skilfully drawn, while they secure the landlord, do not interfere with the husbandry of a good farmer, and are not at all detrimental to him, but they are advantageous to a bad one.

When we look at the results to which I am calling the attention of our society, what an example do they hold out to all men of landed property, but more especially to young men! We see what one man's exertions can do—we see by beginning in early life to apply himself to agricultural pursuits what immense improvement Lord Leicester has lived to see effected in his estate—what benefit he has conferred upon his country, what an interesting pursuit he has secured to himself. This he has done without debarring himself at all from the more exciting pursuits of an English country gentleman: during a great part of this period, while he was effecting this great good, he kept a pack of fox-hounds; during the whole of it he has been distinguished for his success as a sportsman in shooting.

He was undoubtedly the original and greatest cause of these beneficial results; his energy, his perseverance, and his liberality were the great moving powers by which the improvements were pressed forward: but one of the means, and that one of the most important, which enabled him to effect what he wished, was the annual sheep-shearing. It is satisfactory to feel that our society, having the same object of improving the agriculture of the country in view, has adopted the same means, by our annual country meetings, of effecting it. Our power of collecting and disseminating information must be vastly greater than that of any individual; and, seeing the successful results which I have described, I hope and trust we may look forward to producing effects in the highest degree beneficial to the country.

MORAL EFFECT OF THE ALLOTMENT SYSTEM.—The magistrates of West Kent, having met to consider the propriety of carrying into effect the Rural Police Act, requested an account of the number of allotment tenants in forty two parishes in West Kent, and the number of offences against the laws of their country committed by the same, when the following satisfactory statement was presented to them:—There were in all the forty-two parishes nearly two thousand tenants, amongst whom there had been only five commitments in four years; and even these might be accounted for from the fact that several tenants had land granted to them with a view to their improvement, who had been previously committed to prison for poaching and various offences—and in a majority of instances their reformation had been effected. One man, who had been in prison seven times, and had begged pardon of the magistrates and others for different offences fourteen times, has had land for two years, and during that period he has given no cause whatever for complaint, but has conducted himself in a steady, honest, respectable manner. Bolton King, Esq., having some time since allotted forty gardens to some labourers at Tanworth, Warwickshire, an inestimable plan has been adopted by these garden-tenants. One of the occupiers of these gardens being, from a long illness, unable to dig or plant his portion, his wife intended to apply to the parish for some assistance to enable her to cultivate her allotment; upon which these garden-tenants met, and drew up, and all signed, the following agreement, which has since been fully acted up to:—"We, the undersigned, agree to dig and plant, each according to our shares, either by our labour, or by a subscription in money, the ground of any of us, as he may be unable to do it for himself, on account of sickness, and the widow of any of us for two years after the death of her husband."—*Gateshead Observer.*

WENLOCK FARMERS' CLUB.

SIR,—Our long projected meeting for the establishment of a farmers' club in this neighbourhood, took place on Monday, May 30, at the Raven Inn, Wenlock. We had a large and most respectable meeting. Among the company present were George Pritchard, Esq. in the chair, Ralph Benson, Esq., Humphrey Hinton, Esq., Wm. Pinches, Esq., Thos. Mytton, Esq., Rev. R. H. G. More, Rev. — Bates, Rev. B. Howells, Rev. — Willy, Richard Thursfield, Esq., (Mayor of Wenlock) and from 70 to 80 other gentlemen and farmers.

The Chairman, in opening the business of the meeting, took occasion to advert to the great want of unity amongst farmers, and to contrast the conduct of the manufacturers in this respect—showing most clearly the advantages derived by the latter from the establishment of a mechanic's institution, &c.—and strongly urged upon agriculturists a like co-operation with each other.

The first resolution "That a farmers' club be established in this town, to be called the "Wenlock Farmers' Club" was moved by Humphrey Hinton, Esq., (agent to Sir Watkin W. Wynn,) and seconded by Ralph Benson, Esq., who in a long and able speech forcibly seconded the views of the Chairman, and strongly insisted upon the necessity of the owners and occupiers of the soil, meeting together more frequently to discuss subjects connected with the cultivation of the soil, as an improvement which could not fail to be of lasting advantage and importance to both the above classes; this resolution was carried unanimously.

The second resolution "That the club be governed by the following rules, [those of the Harleston Club] was moved by Wm. Pinches, Esq., and seconded by Thos. Mytton, Esq. The rules were all adopted in their original state, except the twelfth, to which the Rev. R. H. G. More, in an able and argumentative speech, moved an amendment insisting upon the necessity there existed for the club discussing the merits of every political question affecting the interest of agriculture. He was strongly supported by nearly the whole of the landowners present. Mr.

Evan Davies opposed the amendment, expressing his firm belief that the first introduction of political questions into the club would most assuredly sow the seeds of discord, and bring on its dissolution. A long discussion ensued, which terminated in a kind of compromise suggested by the Chairman, and ultimately adopted : which was—that no political question be allowed to be discussed at the general meeting of the club; but that any five or more members might call a special meeting of the club to take into consideration any question relating to agriculture then occupying or about to occupy the attention of Parliament, by giving the secretary seven days' notice, and naming the subject to be discussed in the requisition.

The third resolution for nominating officers—"That Thos. Mytton, Esq., be the President, Wm. Pinches, Esq., Vice-President, and Mr. Richard Davies, Secretary, (for the year ending in January next") was moved by Richard Thursfield, Esq., and seconded by the Rev. Benjamin Howells. Mr. Mytton begged to thank them for the flattering honour they had conferred upon him in electing him President for the first year of their club, but much wished they had made selection of one more conversant with practical farming ; for while he took credit for knowing a little about plough farming, he professed to be quite ignorant with regard to the breeding and rearing of stock, but expressed his willingness to do every thing in his power to further the object they had in view.

W. Pinches, Esq. was flattered by the honour they had paid him in electing him Vice-president, but also feared he was quite incompetent to give them any information as to practical farming. His object in joining the society was to learn—not to give instruction to those who he knew were far more competent to speak on the cultivation of the soil. One thing, however, he would assure them, as they had thought proper to confer upon him so distinguished an honour, he should at all times pay the greatest attention to every suggestion made to him which had for its object the promoting the interests of the club ; and he pledged his word that he would most punctually attend all meetings, although living at a distance of eleven miles from the town.

Mr. R. Davis begged to assure them he would use his best endeavours to fulfil the duties of secretary to the satisfaction of the members.

Fourth resolution. Resolved, that the following farmers form a committee of management for the year ending January next:—Mr. Thos Davis, Mr. William Downs, Mr. John Brooks, Mr. Henry Wood, Mr. John Davis, Mr. Wm. Thursfield, and Mr. Evan Davis, was moved by the Rev. R. H. G. More, and seconded by Mr. Thos. Lyster, and carried unanimously.

Ralph Benson, Esq. then moved a vote of thanks to the chairman for the very able manner he had conducted the business of the evening, which was responded to (and most deservedly so) by all present with loud acclamation. The enrolling the names of the members then took place ; after which the president took the chair, and the club sat for a short time to make the necessary arrangements for the next meeting to take place on Monday the 20th of June.

The subjects named for discussion, were the following:—1st.—The best mode of harvesting hay and clover, by Mr. H. Wood. 2nd—The best way of managing lambs the first year, more particularly as to whether it is advisable to shear them or not, by Mr. Evan Davies.

ON AGRICULTURAL CHEMISTRY.

[*Continued.*]

147. "With regard to the glasses employed in the laboratory, &c., water has the power of acting upon and dissolving the alkali at the surface, and leaving an insoluble portion spread as a coating over the interior of the vessel, defending it from immediate action. When, however, time can be allowed, the effect does not appear to be confined to mere surface. In collections of ancient glass, specimens may be selected exhibiting how extensively an analogous action has been going on during the period they have remained buried in the earth. These vitreous relics of antiquity are often covered to a considerable thickness with opal pearly scales of beautiful appearance, consisting almost wholly of silica, whose alkali had been removed probably by the action of water." "In contact with ammoniacal, or decomposing animal matter the disintegration of glass takes place more rapidly. Stable windows, and bottles kept in such situations, often present a very beautiful iridescent appearance, in consequence of the siliceous matter being developed in thin plates on the surface, often amounting to a pearly, and sometimes to an almost metallic appearance ; an effect which it is believed, has not hitherto been investigated." "It may also here be remarked that the flint glass bottles in which solid carbonate of ammonia has been for some time kept, are invariably rendered much more brittle, and pieces of glass fall out upon the very slightest motion of its contents."

148. With all deference to the high chemical rank of Professor Liebig, we cannot survey the facts here brought together without inquiring how it is possible for a soil to exist "which has been exposed for centuries to all the influences which effect the disintegration of rocks, but from which the alkalies have not been removed" (139) ? If "the first colonists of Virginia found a country, the soil of which was similar to the above," Professor Phillips was not so fortunate in Cornwall. (141.)

149. A good theory of Tillage (133, 144) is given by M. M. Payen and Boussingault, in this general principle—that *plants are benefited by the emanations from manures in exact proportion as these, during the process of decomposition, more closely accompany the progress of vegetation.* Assuming this principle, these philosophers point out the obvious utility of pulverising hard and intractable organic remains, as bones, &c.; and, on the contrary, of imparting to soft watery materials increased consistency and powers of resisting too rapid decay. (Ann. de Chemie et Phys., tom. iii, 1841. 95.) This principle enables us to account for some of the great advantages of the drill husbandry, and to reconcile some contradictory opinions of authors as to the soluble or insoluble state of materials supplied to plants, for the purpose of being imbibed by their roots.

150. Under the Drill System not only do plants derive the fullest benefit of light and air by means of their leaves, but the soil about their roots can be watered, hoed, and otherwise pulverised, so as to furnish supplies of food at the time when it is most required. It is absurd, however, to suppose that tillage can supersede manure, or manure compensate neglect of tillage—that

alkalies or azote can supply a deficiency of carbon, or carbon be rendered available without azote, the alkalies, and labour. Draining, tillage, lime, alkalies, burnt clay, farm-yard manure, marl, bones, Flemish manure, animal and vegetable remains of every kind, are useful in their proper places and at proper seasons. Practice may teach a good system of husbandry suited to some particular soil long before science can explain it; and if old usages too frequently stand in the way of improvement, it cannot be denied that the annals of science abound in chaffy projects and unprofitable theories.

151. Fireside farmers have long declaimed against FALLOWING; the moderns have discovered new reasons in favour of the practice. Meanwhile the good old husbandman trudged after his ancestral plough and harrow until theory and practice jointly succeeded in obtaining from the drill husbandry and an improved rotation all the benefit without the disadvantages of the old system. The burning of barren fields, "*steriles comburere agros*" is another instance in which the oldest practice and most recent theory seem likely to coincide—a practice, however, that will be very likely to cause serious damage and wrong unless its consequence be carefully investigated (158).

152. It is evident that the roots of plants can only take up those matters which can be dissolved in water; and it is found that food of plants so dissolved must be largely diluted. Those substances which give water any degree of colour may be considered as unsuitable to pass directly into the vegetable system. It is the province of husbandry to avail itself of those chemical or mechanical properties of the soil which prepare the food of plants, which at one time render soluble materials insoluble, and at another time dissolve them again. Carbonic acid, as we have seen, (64,) acts thus upon lime, locking it up for thousands of years, in the shell perhaps of a snail, and in due season aided only by the agency of rain water, washing it away again from rocks of marble. It is the carbonic acid contained in the living water filtering through well-drained and fertile soils that dissolves many alkaline, earthy, carbonaceous and azotised matters, and carries them through the roots into the vegetable circulation.

153. Some isolated passages in recent publications of high authority may mislead a careless reader into an erroneous notion as to the respective functions of the leaves and roots in the absorption of ammonia and of carbonic acid; there are some vague reasonings by Liebig, which together with the incoherent arrangement of his erudite and otherwise valuable book would certainly convey a fallacious impression on his point not more inconsistent with good husbandry than with what will be found the real opinions of that eminent chemist, on a close and diligent examination, a repeated perusal of his pages which they will abundantly repay. Very little, however, has been added to our knowledge on this subject since the publication of Davy's sixth lecture. "Vegetable and animal substances deposited in the soil, as is shown by universal experience, are consumed during the process of vegetation; and they can only nourish the plant by affording solid matters capable of being dissolved in water, or gaseous substances capable of being absorbed by the fluids in the leaves of vegetables; but such parts of them as are rendered gaseous, and that pass into the atmosphere, must produce a comparatively small effect; for gases soon become diffused through the mass of the surrounding air. The great object in the application of manure should be to make it afford as much soluble matter as possible to the roots of the plants; and that in a slow and gradual manner, so that it may be entirely consumed in forming its sap and organized parts."

154. M. Boussingault refers to some experiments of M. Gazzeri, tending to prove that the roots of plants in contact with solid organic matter really exercise the power of rendering it soluble; and to a remark of M. Saussure, who observed that plants growing in mould deprived of its soluble matters by repeated washings, attained, nevertheless, perfect maturity, though producing fewer seeds than other plants in soil not washed. M. B. on the whole thinks it probable that extreme opinions have been formed on both sides; that plants derive from the atmosphere more than agriculturists in general can be led to believe; whilst on the other hand, the soil contributes to vegetation, besides the saline and earthy materials, a larger proportion of organic matter than could be imagined, according to the calculations of certain physiologists. With regard in particular to ammonia, M. B. concludes, from his own observations on the use of guano during his residence in Peru, that plants derive the major part of their azotised matter from the ammoniacal salts which exist or are formed in manures.

155. Perhaps we are now prepared to bestow a little attention upon some singular facts ascertained by different observers at different times, mostly without any reference to agriculture, but not the less important on that account, if we find them capable of practical application. To these we ave already briefly alluded (32), after detailing some properties of charcoal (29 to 31), which the reader is requested to bear in mind. He will also recollect some other properties of the same substance (33, 34).

156. M. de Saussure, after establishing the absorbing powers of charcoal for different gases, extended his interesting researches to other substances of a porous nature; but found no body which possessed the property in so high a degree as charcoal. The papers of M. de S., in Thomson's Annals, vol. 6, are, however, very deserving of attention by an experimental inquirer. The first volume of the Journal of the Royal English Agricultural Society contains a paper on the physical properties of soils, by Professor Schubler, which may also be consulted with advantage, as suggesting principles for discovering and correcting what is deficient in some qualities of any given soil.

157. More instructive, however, is the profound work of Leslie on the relations of air to heat and moisture, published about thirty years ago. In their several affinities to moisture, the earthy bodies discover the most essential difference of constitution. Alumine causes a dryness of 84 degrees, carbonate of magnesia 75, carbonate of lime 70, silica 40. The absorbing powers of silica are not only feeble but of small extent. Alumine and magnesia, on the other hand, have their energy scarcely impaired by repeated absorptions. The great absorbent power of the argillaceous compared with siliceous bodies deserves particular attention. But many of the compound earths and stones possess the power of attracting moisture from the air in a still higher

degree. These substances need only to be pounded or broken into small fragments, and then exposed for a certain time near a strong fire. Pipe clay, though it contains a large proportion of silica, occasioned a dryness of 85 degrees; whinstone or trap, though very compound, produced an effect equal to 80 degrees; and sea-sand, having an admixture of shells, gave a dryness of 70 degrees. But torrefaction seems remarkably to diminish the faculty of earthy substances to attract moisture. Clay roasted in a strong fire causes a dryness of only 35 degrees; and urged in a blacksmith's forge it affords no more than 8. The process by which nature gradually divides, softens, and disposes stony bodies to receive moisture, is beautifully illustrated in the case of our whinstone or trap. A piece of solid trap produced 80 degrees; another piece, decayed and crumbling, gave 86 degrees; but another piece of the same rock, already reduced to mould, afforded 92 degrees. The ameliorating influence of culture is exemplified in sea-sand: fine sand caused a dryness of 70 degrees; sand from the paths of a sheep walk near the beach 78 degrees; and the same sand lately brought into cultivation 85 degrees. Still these effects are inferior to that of garden mould, which amounts to 95 degrees, and to which decomposed trap approaches the nearest. This material, in its moulded state, constitutes the basis of our richest agricultural districts. Other cultivated soils exert a similar power of absorption and which appear always proportioned to their respective goodness. Nor are such increased energies to be ascribed to the amelioration from manure, since this ingedient, separately, has less influence than the earths themselves. It therefore seems highly probable that the fertility of soil depends chiefly on their disposition to imbibe moisture.

158. "I have just glanced at a theory which, if it were confirmed by further experience, would greatly enlarge the boundaries of useful science. On the nature of soils, the improvements in chemistry have as yet thrown scarcely any light whatever; and notwithstanding the mighty promises held forth to us, agriculture is still obliged, it must be confessed, to grope her way by the glimmering of rude experience. The various absorbent earths offer something like a principle of distinction among them. The operations of tillage serve to open and mellow the soil; while the process of paring and burning, if it goes farther than the mere destruction of the noxious roots and fibres, bakes and hardens the surface, rendering it unfit for the purposes of vegetation, till, after some lapse of time, it again recovers its proper constitution."

159. The foregoing observations of Sir John Leslie refer solely to the absorption of water-moisture from the air by different substances. Those of M. de Saussure (32) show the absorbing powers of wood-charcoal for various gases, especially for carbonic acid and ammonia. We will next consider some experiments of Woodhouse, Davy, and Faraday, and some recent communications of M. M. Boussingault and Payen, to whose sagacity and perseverance agriculture owes so much; we shall then be able to admire, at least, if we cannot explain, the provisions by which the commonest ingredients of the soil attract, perhaps combine, the elements of ammonia and lock up other organic matters until they are required for the purposes of agriculture, and finally afford abundant food to growing plants from the insoluble and otherwise worthless refuse of manufactures.

160. The combinations of azote with the elements of water have been adverted to in many preceding paragraphs (18, 75, &c.). The obscurity that still shrouds the formation of ammonia, and the nitrates in the atmosphere and in the soil, gives interest and value to some facts about to be stated. It is for geologists to speculate upon the action of volcanoes as a source of ammonia—for chemists to decide whether the ammonia that is constantly found in some soils, and the nitric acid in others, are there generated by the union of their elements (azote, oxygen, and hydrogen), or are merely absorbed from the atmosphere, and stored up for the use of plants. But for agricultural purposes it is enough to enquire what ingredients of the soil usually afford these compounds of azote, and by what means they can be rendered more efficient, whether we suppose them capable of combining or merely absorbing and retaining nitric acid or ammonia.

161. The existence of ammonia has been constantly detected in various kind of clay, and in soils containing iron; certain calcareous and other soils have been found to yield nitrates more or less pure, and after a time have again produced the same substances in quantities proportioned to the period intervening between the successive operations. Soils possessing these properties are the most fertile of all.

162. Professor Woodhouse, of Philadelphia, recorded the following experiment in September, 1808. He exposed half a pound of soot mixed with two ounces of pearl ash in a covered crucible to the intense heat of a furnace for two hours. When the mixture became cold, it was emptied upon a plate, and a small quantity of cold water was poured upon it, when it immediately caught fire. Mr. W. was astonished to find a disengagement of ammonia. The experiment was repeated with common charcoal, with exactly the same result. He observes that azote is one of the component parts of ammonia, and as this base is not contained in either potash, water, or charcoal, he naturally asks "whence did it arise to form the ammoniacal gas?"—*Nicholson's Journal*, xxi. 290.

163. The experiment was "repeated with much earnestness" by Sir H. Davy, who found by cooling the mixture out of the contact of nitrogen, that no ammonia was then formed; he therefore concluded that "this substance evidently owed its existence to the absorption of atmospherical air by the charcoal." Carbonaceous matter, therefore, heated strongly with potash, acquires the property of forming ammonia when moistened and exposed to the air.

164. In the *Quarterly Journal* for April, 1825, Mr. Faraday published some cases of the formation of ammonia, and some means of testing the presence of minute portions of nitrogen in certain states. Having occasion to examine an organic substance with reference to any nitrogen it might contain, Mr. F. was struck with the difference in the results obtained when heated alone in a tube, or when heated with hydrate of potassa: in the former case no ammonia was produced, in the latter abundance. He was induced to heat potash with substances containing no nitrogen, as lignine, sugar, &c., and was surprised to find ammonia still a result of the experiment. This led to trials

with different vegetable substances, all of which yielded ammonia in greater or smaller quantity, and ultimately it was found that even several metals when treated in the same way gave similar results. Potash is not the only substance which produces this effect with metals and vegetable substances. Soda produces it, so also does lime. Water or its elements appear to be necessary to the experiment. Potash or soda in the state of hydrates generally contain the water necessary. Pure caustic lime with dry linen produced scarcely a trace of ammonia, whilst the same portion of linen with hydrate of lime yielded it readily. Much appeared to depend upon the quantity of potash, sugar for instance, which with a very little potash would with difficulty yield traces of ammonia, does so very readily, when the quantity of potash is doubled or trebled; and linen which with potash gives ammonia very readily, yields it the more readily and in greater quantity as the proportion of potash is increased. Mr. Faraday was induced in the course of these experiments to try again and again whether the potash or lime would not yield ammonia when heated alone, but when well prepared, and the tubes experimented in perfectly clean, they gave no indication of it. By exposure to air for three days in a room hydrate of lime appeared to have acquired the power of evolving a little ammonia when heated, and caustic lime so exposed gave still stronger traces of it. White Cornish clay, being heated red hot and then exposed to the air for a week, gave plenty of ammonia when heated in a tube. When the substances were preserved in well stoppered phials, these effects was not produced. Mr. Faraday concludes with the just observation that "the circumstances of the absorption by lime and other bodies, of something from inhabited atmospheres, which yields ammonia when thus tested, is very interesting."

165. The refuse of sugar houses has long been considered a valuable manure in this country, but we are informed by M. M. Boussingault and Payen that it used to be thrown away in France, until one of these philosophers made known its virtue for agricultural purposes in 1824. Since that time it has come into such repute as to form a considerable article of importation from other countries into France, where the sugar refiners can now realise for their refuse more than the original price of the animal charcoal and other materials of which it originally consisted. It is imported by way of Hamburgh, Amsterdam, London, Cologne, Genoa, and Trieste, from Russia and Bavaria. The fertilising properties of this black manure enhance the value of bones that have been previously exhausted of their gelatine and glue. These, calcined, furnish animal charcoal; but unless so prepared are deemed of little value by M. M. Boussingault and Payen, who consider the phosphate and carbonate of lime obtained from calcined bones and from the refuse of glue manufactories as producing no sensible influence on vegetation.

166. When the refuse from sugar-houses came to be appreciated, and the demand for it to exceed the supply, a manufactory of animalised carbon was established in France for agricultural purposes. Carbonaceous matters were first calcined with calcareous earth in close vessels, and then mixed with putrescent animal substances, which were thus deprived of their offensive properties. This new article of manufacture is now extensively applied in large towns to the purposes of disinfecting many sources of pestilential effluvia, and of fertilising the fields without any risk of imparting disagreeable properties to the growing vegetables, or of polluting the pure and fragrant atmosphere of the country.

167. It is difficult, as M. M. Boussingault and Payen remark, to comprehend the utility of these operations, so important to rural economy, and at the same time to retain the theory which ascribes to vegetable humus (58) and ulmic acid the first rank among manures.

168. **Paring and Burning.**—The philosophers just named inform us that the good effects of paring and burning (*écobuage*) tenacious soils abounding in vegetable remains, seems to them owing—1st, To the destruction of an excess of organic material destitute of azotised substances. 2nd, To the transformation of the superficial layer of soil into an absorbent carbonaceous mould capable of retaining part of the ammoniacal vapours evolved during the calcination, of facilitating the percolation of water, of moderating the decomposition of the organic matter of the manures, and of condensing the azotised gaseous products of their fermentation. 3rd, To the conversion of the vegetable salts into carbonates which have an alcaline action favourable to vegetation. Professor Liebig relates instances of heath, &c., being burned to great advantage, which he attributes, rather exclusively, to the production of alkaline carbonates. Davy, having found some peat ashes which he had analysed to be rich in gypsum, was led to consider that substance as constituting their principal value; others, observing the rich verdure of spots where charcoal had been burned, have supposed that the dust or powder of charcoal would be found an useful application, and this conjecture has been verified by experiment.

169. The **Burning of Clay** has been extensively practised, with permanent advantage. Two objects are attained by this process:—1st, Every kind of clay exposed to a red heat is rendered less cohesive, and has its attraction for water diminished (157). The objection of Sir John Leslie (158) does not apply to clay. But, secondly, a still greater improvement is effected in such clays as by burning assume a red colour. In these the salts of iron are decomposed, and the resulting red oxide is found to possess the faculty of generating or absorbing ammonia.

170. The roots, &c., of weeds may be committed to the flames when they are of a tough and intractable description. But most of these, if well fermented with liquid manure, gas water, &c., and buried in the soil at the commencement of a rotation, would gradually moulder and disappear after frequent exposure to the influence of air, warmth, and moisture. Much, however, depends upon the nature of the soil. Many vegetable substances soon decay in calcareous, sandy, hungry earth, which would remain for years unchanged, if embedded in tenacious clay.

171. On the whole it is to be feared that carbonaceous materials are often unprofitably consumed for the sake of their alkaline salts. Heath and peat may be excepted, provided that due care and judgment be used in the disposal of their ashes. These ought to be immediately, and evenly distributed, or mixed with fresh-slaked lime and some earthy or carbonaceous material. As the alkalies in all their combinations are rapidly dissolved in water, they ought only to be finally used

in spring and early summer, when the soluble compounds they may form can be arrested by the roots of plants. As these salts are not volatile they can be used upon grass land without loss, and in all cases should be sparingly scattered over a large surface.

THE FARMER.

No. 7.

On Hay Making.

The preparing of grasses, clover, and other vegetable substances as winter food for horses and cattle, does not in general receive that care and attention which so important a subject deserves; in many instances *quantity* is preferred to *quality*; ignorant or heedless of the consequences, a large quantity of bad harvested food is placed before cattle, who in the vain endeavour to satisfy their hunger, consume the indigestible stuff, which distends their stomachs, and causes an undue craving appetite for more; from the want of nutritive juices in the food, the cattle become weak and unfit for labour; whereas, on the other hand, when cattle are supplied with a moderate quantity of wholesome, well-harvested food, they eat the same with avidity, the stomach not being over loaded; the digestive organs acting freely upon the juices, convey the requisite portion into the blood, thus causing a free circulation, and the animal is lively and performs its functions with health and activity.

Harvesting, or making hay, is generally considered so simple an operation, and so easily acquired, that most persons fancy themselves competent to the task; but how few perform the work as it ought to be done; what immense quantities of good hay is spoiled every year through mismanagement. To obtain good hay, &c., requires much care and judicious attention. Hay should always be mown before it is quite ripe, that is, before the sap becomes dry and the seeds hard; by cutting it a few days before it is ripe, you secure the benefit of the vegetable substances, which when properly harvested becomes wholesome and nutritious fodder. So much depends upon the state of the weather, that it is impossible to lay down any *general* rule for harvesting, but the following hints may be deemed serviceable.

In fine clear weather let your hay remain in the swath, a whole day after it is cut; the next day it should be well spread and turned over once, so that every portion may be exposed to the sun; make it into small grass cocks for the night; next day open and spread it again in the sun, give it another turning, and before the hay becomes cool, make it into large cocks; let them rest a day untouched, and on the following day the hay will be in prime condition for making into a rick, or placing on a hay-loft. In fine hot weather hay does not require much harvesting; if it is too much exposed to the sun the juices are lost, the hay becomes hard, brittle, and of little value; instead of being withered and retaining the nutritious qualities, though in a dry state. When hay that has been properly harvested is put together in a stack or rick, it undergoes a certain degree of heat or fermentation, which renders it mellow and more palatable for the cattle and horses, but if the sap is all dried up, no heat is engendered, and thus it becomes very little better than straw; while on the other hand, if the hay is put together before it is sufficiently harvested, the stack becomes heated to such a degree, that the nutritious qualities are destroyed, and consequently rendered unwholesome as food for horses, and totally unfit for cattle.

If the weather is unsettled and showery, you must endeavour to mow your hay while it is dry, as the cutting it when wet, renders the underside of the swath liable to be injured much sooner than if cut when dry. Should the weather continue showery, it is advisable to leave the swath untouched, for it will keep much better in the swath than any other way; but if between showers you commence spreading your hay, open only a small quantity at a time, turn that over, secure it in small cocks, then spread another lot, and so on, until you have gone over the field, being careful to spread no more than may be collected together in a short time, should the rain come on. By following this plan many a large field of hay has been got together in good condition in very showery weather. Again, if the weather continues very wet for a considerable time, the grass under the swath begins to turn yellow, you must watch the opportunity of the first dry hour to turn the swath upside down without shaking it; or if the hay is in small cocks, remove them and place one upon another, as the letting them remain long in the place where the grass becomes yellow, is injurious to the grass, and soon rots the hay.

When hay that is intended to be made into a rick is rather damp, it is advisable to make it into large cocks, about a cart load or two in each; let it remain so for two or three days, which will prevent its overheating or getting mouldy when made into the rick.

Clover requires rather more care in harvesting than hay, for, being a juicy vegetable with broad leaves, it imbibes the wet more rapidly than hay or grass.

Ryegrass and evergrass should invariably be cut long before they are ripe, for if they are allowed to ripen, the stalks become hard, the seeds shed and are lost, and in that state they are almost worthless as food for cattle. In harvesting ryegrass, &c., the same plan as recommended for hay should be adopted.

It is much to be regretted that hay barns, or sheds, are not more general, particularly in Wales, where the hilly state of the country renders it so liable to frequent and sudden changes in the weather, having the variableness of the four seasons often in a few hours. The erection of hay-sheds are very simple, easily done, and not expensive; some are made by fixing *four* strong poles in the ground, about 8, 10, or 12 feet high, formed like the four corners of a rick, and secured at top by frame work; on that frame slight poles are placed in the form of a roof, which is then thatched with straw, fern, or rushes; if the shed is well made it will last for years, and the expense of erection will soon be repaid by the preservation of your hay, &c., in wet weather, besides saving the annual expense of thatching your ricks. In some parts of England they make the roofs of their hay-sheds moveable; the frame being longer than the roof, mortise holes are made at the end of the frame, into which the upright posts are introduced; thus moving up and down as required, and supported at the proper height by strong wood or iron pins thrust through the posts. The utility of these sheds in wet and showery weather is incalculable, for by placing the roof low you can secure ever so small a quantity, and as your quantity increases you can raise the roof; even hay that is partially moistened by rain, may be dried, if placed lightly under the roof. Hay placed in these sheds is sure to be sweet and wholesome.

June, 1842. Delta.

FURTHER HINTS FOR THE IMPROVEMENT OF AGRICULTURE.—ON LEASES.

BY MR. JOHN HANNAM.

(From the Quarterly Journal of Agriculture.)

Having in a former paper* discussed the importance of Agriculture, and the consequent necessity of lending our utmost efforts to foster its improvement, and having at the same time shewn such means as were, in my opinion, calculated to promote that improvement, in making any further suggestions on the same subject, it will not be necessary to show cause *why* we should endeavour to carry out all hints that will give an impetus to the progress of agricultural knowledge, but merely to show that *these* will tend to that end.

Before proceeding, however, to offer any suggestion, or to show its operation, let me guard against misconception; let it not be supposed that I undervalue any of those means for the promotion of British husbandry which I have at a former period urged the adoption of—urged, too, as the "best"—because at this particular period they are the preliminary steps to other and more intricate paths, which can never be entered upon until the gateway is free from obstructions; for it cannot be hoped that other means, which involve a sacrifice of self-interest or of personal prejudices, can be extensively employed until agriculture begins to assume its proper position as a science, and as a national interest. When, indeed, by the means which we have before discussed, we see it regarded as that stay to the good ship which enables her to ride in the harbour in safety, while others are tossed upon the treacherous waters; when, by the united effort and individual exertion which those means develope, we see the triumphs of agriculture alike clearly written on the face of the soil and the forehead of the cultivator; when, in fact, what has been done teaches the public to *think* what will next be done; when the public mind begins to *feel* the impulse which, I am proud to say, through such means it has received, then will the veriest sluggard find it his interest to move on with the crowd. As he runs, too, he will read a lesson of instruction in every field. When this is the case (and it will be so, and that shortly, I am sanguine enough to believe), it will only be necessary to hint in order that a means of improvement will be adopted, and then we may hope to see private prejudice and individual conceit give way to any and every instrument that will aid in the discovery of those treasures which are yet buried in the earth. Under present circumstances, however, if we would see a flourishing harvest of improvement, it is as necessary to prepare the soil as to sow the seed.

From this, then, it will be evident that, though I have already urged the adoption of certain suggestions as the *best* means of promoting the improvement of agriculture, because they *were the best preparatives for every other*, and because they did not press upon any particular class, but were such as every one, however high or however low, could encourage or promote in some degree, I do not consider them as the *only* essentials to improvement, but merely as agents which are preparing the public mind for the adoption of *all means* which tend to that end. Nor, in offering any other hint towards attaining that end, do I at all undervalue or depreciate what I have urged before. At that time (p. 460, vol xi., of this Journal) I did not forget to intimate that, after we had done all that then seemed good, much still would be required of us. "Excellent," I observed, "as are the means which have been proposed, and which we have discussed in the preceding pages, when the friend of agriculture has supported these, as it is absolutely incumbent upon him to do, he has not done all. Many means of benefiting the cause may be suggested, or may accidentally offer themselves, which I am far from inferring should be neglected, because they are not mentioned here; on the contrary, I would remind him that it will be his duty, as a good and faithful servant, to turn them to the very best account."

And it is this impression, strengthened by the foregoing reasons, and by the conviction that the *first-fruits* of even a partial adoption of those preparatory means, of which we have spoken, have *begun to develop* themselves, and that there is, at the present moment, a large portion of the agriculturists of Great Britain ready to take at the tide *every* or *any* means that will promote the cause in which they are embarked, that impels me to offer any further suggestions to their notice. With these considerations in view, I feel that though I may not be able to urge the adoption of what I propose as *absolutely* necessary, if I can show that it will do anything in furtherance of agricultural skill, my labour will not be in vain. This, then, be my task—a task the more grateful when I reflect that there are no preliminary or practical difficulties to oppose the execution of what I would suggest; for if those to whom I appeal have the will, they have always the power to carry it out into practice.

This will require no further illustration, when I state that my object is to suggest to the landowners of the United Kingdom the propriety of *abandoning the present practice of letting their farms from year to year, and of adopting,* in lieu thereof, short leases of, say, from twelve to twenty years.

The propriety or policy of this change will be seen by a glance at the permanent evils of the one, and at the advantages of the other. The first and grand evil of the tenant-at-will system is, that it *checks the spirit of agricultural improvement.* This it does at the present time most especially. Within the last ten or a dozen years, intelligence, we know, has spread most rapidly over the country; means have been taken which have drawn out a mass of agricultural knowledge scarcely ever dreamt of in the philosophy of our former agriculturists; the united efforts of the most enlightened of their class have tended to diffuse this knowledge into places hitherto impervious to improvement; success has stimulated exertion, so that our land may be now fairly said to represent a body through which a flow of vital fluid is continually circulated, by the means of the heart, arteries, and veins. Thus information flows from society to society; theories born in the closet are tested by practice; and from club to club, from county to county, their truth is confirmed, or their errors exploded. *Truth is scarcely born be-*

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* *Vide* Quarterly Journal of Agriculture, vol. xi., p. 456, in an essay on "The Importance of Agriculture, and the best means of promoting its Improvement."

fore she becomes old. In fact, not a month passes in which something is not done—in which something is not learnt or unlearnt—in the science or practice of agriculture. And we may therefore fairly presume that there is scarcely a place in which there is not *one* man who has banished from his vocabulary the word *best*—who "acknowledges no perfection, and knows no impossibility;" and that there are very few farmers indeed whose ears are shut to *all* and every voice of instruction in the work of improvement. How seriously, then, must the tenant-at-will system check the progress of this improvement. When agriculture was to all appearance a *stationary* practice, this method of letting the land might have no ill effect of consequence to the prosperity of the farmer; *now*, however, that it has become a *progressive* science, how many impediments does the system oppose to its equal progress as a practice? We know that every change from evil to good, in management, involves an outlay of capital; we know, too, that in every field there is an unworked mine of agricultural wealth; but it cannot be brought to light without an expenditure of money, which, once sunk in the soil, *can only be recovered in the course of years.* Can the farmer, then, who has his farm from year to year only, with justice to himself and his family, enter freely upon this outlay? He may do something, but how much less will it be than he ought to do? But how many are they who will do nothing in such cases, except what is compulsory? And are they blameable? I think not. Human prudence, family affections, aye, and selfish care, will oppose many and pungent obstacles to any man's investing his property in a speculation the proceeds of which he may never be permitted to reap. I am not so ungenerous as to hold up, as a bugbear, that a landlord's *tyranny* is to be feared. From that source, I believe, the farmer is pretty safe, if we may judge by many of the chief landed proprietors' examples; but still, though he may *actually* be safe, he has no *real security* that he is so; and the very idea of this is enough to alarm his worldly prudence, and to effectually put away his ideas of permanent improvement or large outlays. But were the tenant ever so confident in the good faith of his landlord, can he build upon this? His landlord is but a man—as such he *may err*, but he *must die.* The same rule applies to the tenant himself; yet, if either of these contingencies should happen to one or the other, what is the consequence? If either of the parties should err (and the tenant can no more answer for himself, at all times, than he can for the owner of his farm), and necessity may tempt either to do that which is not strictly just, misconceptions may arise (and where there are factors, agents, stewards, &c., in the matter also, without imputing motives to any, we are aware these *will* arise at times), and proceedings result, the consequence of which, if it be merely a *separation of interests in the eye of the landowner is ruin to the too confiding tenant, whose little whole* is invested in the soil. Again, if either landlord or tenant should die, where is the tenant's capital? If the event brings a change of ownership, who can answer for the conduct of this new possessor? He may look with a mistaken view on the subject. If he have purchased the farm, he will perhaps suppose he has purchased it as *it is*, and not as *it was*, before the tenant had employed his capital upon it; and then the latter will have the pleasure of paying interest, in an *increase of rent*, for his own money. Trustees, &c., may be in possession, and it is not improbable that justice to their wards' interests will in some cases overbalance generosity to the tenant. Should the tenant, however, under these circumstances die, what is his death-bed consolation? With him dies that which should have ministered to the comfort of the widow and the fatherless! Alas! this is a case which has been too often verified. Can it, then, be maintained that the system does not check the progress of agricultural improvement? When we look round upon many of the present race of tenants—when we see how they have progressed in intelligence as a body—and when we see what advances they have already made in the practice of agriculture, in spite of this system, we may judge of the improvement which would spread over the face of the country, were the tenant able to make himself *certain* of reaping the reward of his own labour. As it is, however, we may set it down as an incontrovertible fact, that the farmer can never benefit, as he ought to do, by modern improvements, until he becomes a *free agent*; and *that* he never can be, while another possesses absolute power over his capital. Whether or not this power is used it is the same; he can have no real confidence while open, as we have shewn, to so many contingencies, the advent of any one of which robs him and his family.

When we take these things into consideration, and connect them with the peculiar disadvantages that the farmer has to contend against; when we reflect that, under the most favourable circumstances, his ordinary outlay of capital is two years before it returns to him with any interest; that this capital is at the mercy of fickle seasons from one end of the year to the other; that he has after all to stand the chances of the market (which are all the risk those in trade run), viz., the rise and fall of prices, and the chance of good and solvent customers; and that, in addition, under the year-to-year tendency, he has no certainty but that the talent which *he* invests may be taken by another, there is no wonder that he should be slow to adopt improvements, or that he should be loth to put more in his farm than he can recover again in a short time. Indeed, under such a system, we *must have* a large proportion of bad farmers. The bold and intelligent man cannot prudently carry out all that he knows; he cannot depend upon the future, and he is compelled to decline those *permanent outlays* which, in the course of time, would be of permanent profit, and to turn his attention merely to the *exigencies of the present.* On the other hand, the fearful and anxious tenant manages, as it were, from hand to mouth, invests no capital that he cannot call back quickly, and seems always ready for the worst. Under these conditions, therefore, the farmer is a speculator upon terms peculiarly disadvantageous. He has difficulties known and certain, greater, as we have shewn, than any other trader; but, as a tenant-at-will, he has an *uncertain* one which represses his exertion the most. The former he sees, and prepares to grapple with; but the latter hangs over his head like the sword of Damocles, and he fears it may come upon him when he least knows. Under its influence, therefore, all his efforts are paralysed.

Such, then, is the grand evil of the present prevalent system. It gives no security to the tenant for his money; he is bound to risk his capital in the face of many contingencies, or to make as few outlays as possible; and the consequence, as we have shewn, is, that where one has the blind faith to employ his capital liberally, there are ten whose caution conquers the spirit of improvement altogether.

There are other evils also attendant on this system, which are not unprevalent. One is, the facility which it affords to men without skill or capital to get farms; and another, the temptation it holds to the needy man to make a temporary convenience of a farm. Thus, as regards the first, how often, on the occasion of any farm's being at liberty, do we see a dozen or more applicants, who know nothing of its nature, or of the capital it requires, hurrying to the agent to take it, on the presumption that, if the late tenant paid the rent, they can. Thus, they often *bargain in haste and repent at leisure*. It is in this way we see tenants with a capital of 500*l.* upon a farm that requires 1000*l.*; for, as the occupier is a tenant-at-will, there is not generally that investigation into his qualifications which there should be; and on his side he is often impelled to take hold of an engagement, though not to his mind exactly, as a *convenience, and till he meets with something that suits him better*. The result of these contracts may be easily defined. If the farm be out of order at first, the tenant, who takes it as a convenience (*i. e.* on the determination to get all he can from it without much cost) soon finds that it won't bear robbery; but he finds out also that it won't do to expend money in it; he is therefore content to take what it gives, and to return it nothing; and he robs it, or it robs him, till after a time there is no more left to rob. In the other case the tenant finds himself on a farm with a supply of cash below the demand, his farm wants improving, but "it must be done bit by bit, he must see how it answers," are his cogitations; and of course—as under this sort of management it grows worse—his land goes half stocked, his crops fail, and he finds himself in difficulties before he knows how to turn himself, the capital he had has melted, and that without making any reform in the condition of his farm, and in a short time he is left penniless, and in the possession of a farm which, after such a course of negligent management, requires a capital double of what it ought to do. He has, however, courted the embrace of the bear, and it will not permit him to escape till the breath is squeezed from his body. These are not supposititious cases. So much, then, for the evils of the system we would abolish. The advantages of the one we advocate may be stated to be, the prevention of those very evils which the other produces. Thus, let us remove from the tenant his doubts, let us secure to him, or his family, the interest of his own capital; let us afford him a moderate length of tenure, and—by thus making him independent of any little *contretems* which may happen, and by giving him time to rally against any unexpected contingency—we give him a confidence which will teach him to make the best and quickest of his capital in the permanent improvement of his farm. What is necessary will then be *politic*. There will be no anxiety in making the outlay—no fear of reaping the benefit of it. He will then look rather to a *sure* return than a *quick* one.

Before, too, a contract was entered into between landlord and tenant, for a period of fifteen or twenty years, there would be enquiries made on both sides which would prevent much of one evil of which we have complained. The landlord would require from the tenant respectability, intelligence, capital adapted to the farm, and the necessary practical skill to employ it properly; and the tenant, before he concluded his agreement, would study the nature of his farm, weigh over its necessities, measure his own ability to meet the outlay required, and seek from the landlord such aid as was requisite to put it into proper order for his occupation. But *after* the bargain was completed, it would not be the principle of the tenant to *wait to see if his farm would pay*, before he laid any capital in it, but to endeavour to *make it pay*; and this could only be done by striving to alter and amend whatever was wrong in its condition. Moreover, as he would have no fear in investing his capital, all these improvements he would make *quickly*, in order to have the benefit of them as *soon*, and for as *long* a period, as possible.

For these reasons, then, it appears to me that an alteration of the tenure by which farms are so frequently held, would be of high importance to the progress of agricultural improvement; but if that alteration be from the year-to-year plan, to a system of leasing, it is impossible, in my opinion, to do anything that will, in a greater degree, promote that progress. The process by which I arrive at this conclusion may be thus summarily stated.

To give a man a temporary and uncontrolled right over his farm, and a reasonable security of tenure, is to give him *confidence*; and to make the taking of a farm a matter of consequence and consideration, both on the part of the landlord and the tenant, is the best way to get a farmer with *skill and capital adapted to his farm*. And, without a farmer has *capital* to expend, *confidence* to make him use it, and *skill* sufficient to use it properly, we cannot expect to see his farm benefit, as it ought, by the improvements of modern agriculture.

But every rule has its exceptions. I do not mean to assert that all tenants-at-will are bad managers, or are wanting in sufficient confidence to allow them to expend capital in improvements. On the contrary, I know many, very many, first-rate farmers who are tenants merely from year to year. They have confidence, in many cases, to look forward, and to make a present and temporary sacrifice for a future and permanent good. But then, as tenants, we may say, their lines have fallen in lucky places, or they could not do this. As it is, however, we may safely *doubt* the wisdom, in a worldly sense, of these outlays, when so many circumstances, as I have shewn in the preceding pages, may interfere to rob the tenant of both capital and interest. But although in these cases we may *doubt* the policy of such a use of the farmer's capital, we may rest *sure* that if he, in some cases, *does much without security*, he would, *in all cases do more with a security*. Let it not, however, be thought that I would infer that there are no landlords worthy of the confidence of these liberal tenants. I know many, indeed, who would scorn to take advantage of a conduct which is their pride; but then, as I have before said, a landlord, as an individual, is open, along with the tenant, to many contingencies which may affect their relation to each other; and if there are some farmers who, with these in their view, *can speculate* upon their farms, there are, I am equally well aware, *many more* who cannot divest themselves—however amiable or estimable a man their landlord may be—of an instinctive or intuitive caution, which keeps them from vesting capital without *real*, as well as *apparent* security. They are, consequently, much worse farmers than they would be, were they secure, for a series of years, by a lease.

A quotation which I have just met with, exhibits still more fully the value and necessity of security. Thus "*All the great operations of the husbandman have a prospective result as regards the profit to be derived.* The capital expended in such cases is only to be drawn back by periodical returns, after *the lapse of time.* In the providing of extraneous manures, in the adoption of rotations of crops, which to be effectual must be extended through many seasons, in the draining of land, and the like, time is necessary both to effect the operations, and to *recover, with a future profit, the capital employed.* A landlord will scarcely fail to experience that, if there be not a sufficient period of secure possession accorded to the occupier, the necessary expenditure on the cultivation of the ground *will not be hazarded;* but, more than this, a person of good capital will, like every trader, regard as a benefit the power of carrying on his business undisturbed, and will set a *pecuniary value on security and independence.*"*

One objection, which I anticipate, to the extensive letting of farms on lease is, that it would make the farmer too independent—*i. e.* it would destroy the influence of property, and give the tenant too much control over his land, so as to enable him to neglect or rob it.

In reply to the first part of the objection, I have only to say that if, by the influence of property is meant an absolute, and in many cases, consequently, an arbitrary command over the tenant's property, and an unlimited hold upon his free will as a farmer, and his opinions as a man—such an influence, in fact, as appertained to property in the feudal ages—the system *would* operate to diminish that influence. That, however, it would injure that fair and legitimate influence which the owner ought to have over the cultivator of the soil, I deny. The *source of a landlord's legitimate influence is not his power to do evil, but his ability to do good;* and I do believe, much as the landlord's influence is apt to be sneered at, that, in the agricultural districts, at least, where it depends upon the former in *one* case, in *ten* it springs from the latter feeling. Indeed, the connection between the landlord and the tenant is too intimate, their interests are too much alike, and the value of a good understanding at all times too apparent, to cause any diminution of the landlord's *proper influence,* or any abuse of the tenant's temporary power, under the lease system.

That his temporary power, or independence, would lead the tenant to neglect his farm, is equally unlikely. His own interest is guarantee sufficient that he would not injure his land by improper management, during the earlier years comprised in his lease, while an effective stipulation, or covenant, would guard the other and latter years. Thus, say we let a farm on lease for twenty years, the plan would be for the tenant to manage as he thought fit for the first sixteen years (a few injurious crops, according to local or natural disadvantages for such, perhaps, excepted), but to be compelled, by a precautionary covenant in his lease, to pursue a certain course of cropping and of tillage for the *last four years.*

Upon this plan, if a tenant's system of management was a good one, he might have his lease renewed at the expiration of the sixteen years, when he would be at liberty to pursue his own system, and the compulsory clause would *never come into operation.*

In every lease, however, as few stringent covenants as possible should be introduced. In several farmers' clubs, where the subject has been discussed, it has been the general opinion, that they "merely retard and annoy the good farmer, and rarely improve the unskilful."* Indeed, then, so far from it being an objection that the farmer would be "too independent," we may safely assert, that he cannot be too much so. Thus we know, that, as a tradesman, his speculations should be perfectly voluntary. A compulsory purchase, or a compulsory sale, is always attended with a sacrifice. Every fetter, therefore, which at all interferes with the farmer's search after the latent treasures of the soil, injures or prevents his success.

Had an act of Parliament passed fifty years ago, ordained that all letters should be sent by, and that all travellers should make use of the roads and coaches then in existence, and none else from that time henceforward, with what contempt should we now look back upon such a piece of legislative wisdom! How soon would it have been repealed! Is it more rational, then, for us to bid the farmer make "all speed" to the goal of improvement, and yet to forbid him the use of his eyes in search of the shortest path?

But it will, perhaps, be urged that the farmer will, under a lease of fifteen or twenty years, be too much affected by a depression of prices, unless his contract be a very advantageous one; and that, under such circumstances, he will not be able to procure any relief from his landlord.

The first position is a gratuitous assumption, and, even were *it* true, the latter is a decided *non sequiter.* Thus, if it is reasonable to suppose that any man would be so mad as to take a farm upon lease, at the price of productions *for one year,* it is just as likely to presume that any landlord would let a farm for a series of years, at the low prices of another season. It is as fair to infer one as the other; therefore the chances are equal. Before, however, a lease of a farm is given for such a period as twenty years, the quantity of produce is estimated, and the gross value of the same ascertained at the average prices of a *number* of years. From this a certain fractional part —(1-5th is generally about the mark)—is reckoned for the rent. The remainder is calculated to belong to the farmer for tithe, rates, taxes, labour, maintenance of family, mechanics' bills, losses, interest of money, &c. And before a farmer agrees to these terms, it is his duty, also, to estimate the products of the farm, to find their value from the average of other years, and then from the gross amount to deduct the cost of his labour, household expenses, taxes, tithes, rates, and other incidental charges; when, if he has a balance adequate to the rent, he, of course, comes to terms. It is true, that it is a serious business, and one of risk; but a great deal of this risk depends upon the judgment of the farmer, and the fault of his judgment is not the fault of the system, should he make a dear bargain. There is a similar chance, however, of taking a farm at too dear a rent from year to year, but this is no rule:—*no system can be made to protect those who have not knowledge enough to keep out of danger.*

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* Quarterly Journal of Agriculture, vol. i. 795.

* Johnson's Farmers' Encyclopædia, p. 738.

But, then, it is said that the lessee cannot procure any relief from his landlord. This, as I have said, does not follow at all, even if we allow the former part of the objection. It is true, that he is not able to say—"you *must* reduce the rent of my farm, or I must leave it;" but, still, he can at any time ask for relief; and, as the power of giving is as much at the option of the owner in one case as the other, there is an equal probability of success. There is, however, no necessity for us to assume that this demand would be made, except where misconduct or ignorance had operated upon the lessee (and both are companions, which bring their own rewards along with them, and no law can or ought to prevent the infliction of the same) —for, in the generality of cases, the very serious nature of the contract, its duration, and the consideration required before any one would become a party in so responsible an engagement, is sufficient guarantee that no hasty conclusion would be come to; but that a contract, which was to be in force for a length of time, would be *based upon the prices of products for a number of years past.* In this case, therefore, fluctuations of the market would not derange the calculations of the lessee—the conditions of his agreement preparing him for the rise and fall. But there is another safeguard against bad times, which the holder of a lease possesses. When he takes a farm, in the manner I have detailed, he values the gross products of the same, not at what it will produce by his superior management, but at what it does produce at the time being, or at what it is calculated to produce in its *present condition.* If, therefore, he can, by superior skill, make it produce one-fourth more than it did formerly, his lease ensures him the benefit of it, and encourages him to continue his improvements; and, when a depression of the market takes place, if his produce does not fetch so much as it did once, he finds that he has more in quantity, so that the aggregate value shews still in his favour; but should brisk markets come, he has both good prices and an increased quantity of produce.

There is, however, another method of determining the annual rental under a lease which is extensively used as a guard against fluctuations, *i.e.* by a sliding scale, regulated by the price of grain, &c., for the year past. Thus a farm is estimated to produce a certain number of bushels of corn per acre, and to pay a certain rent-charge, when wheat sells at 8s. per bushel; but should the price fall to 6s. per bushel, the landlord's rent falls in the same ratio; for it is obvious, that the gross value of the produce will decline in the same measure. By this means the farmer is partially protected. To this it has been urged that, if it does good at one time, it does evil at another; for, since high prices are not only caused by increased consumption, but also by decreased production, when the price of grain gets up, owing to a deficient yield or a bad harvest, the farmer will have to pay an increased rent. This may, in the opinion of some, be a fatal objection. To these, then, the fixed system recommends itself. In my opinion it is by no means impolitic to endure a small evil for a great good, and we should remember, that, by the system of corn rents, the farmer has three out of the four points in his favour. Thus, if prices are low, from a limited demand, he has a reduction of rent.

If prices are low from an *increased production,* he has more grain, yet, at the same time, a reduced rent.

If on the other hand prices are high from an increased demand, he has a higher rent to pay; but then he has more money to pay it with; for as the rent is but, say 1-5th of the produce, the owner only gets 1-5th of the advance in price.

And it is only when the advance of price arises from a *decreased production*, that it operates against him. Then he has a higher rent without any advantage of market; for it is probable that the advance of the value of his grain is more than counterbalanced by the *diminution* of the *quantity.*

But it should not be forgotten that this diminution in the quantity of his grain is not *all loss* to the farmer. His original rent is founded upon the presumption that his land will grow a certain quantity per acre; but this quantity is the average of a number of years; so that if one year he *falls short* of the quantity, it is reasonable to suppose that in other years he exceeds it. When we consider, too, that he is, or ought to be, making improvements, it is fair to presume that he exceeds the estimated quantity upon which his rent was originally based, much more frequently, and more largely, than he falls short of it.

But a truce to these objections. Whether the sliding or the fixed rent may be preferred is a matter of no importance compared with the great question itself—lease or no lease. And in canvassing the various *minutiæ* connected with the two systems, to endeavour to refute one system at the expense of the other is useless; for both can produce evidence worth more than a volume of opinion—*fact.* Both have been in operation, both are now so, and the beneficial effects of each require no commentary. But, indeed, in advocating by argument, founded merely upon reason, the extension of the system of letting lands by lease, as a means for promoting the improvement of agriculture, we can bring no proof of the truth of our position so conclusive as that which is open to our eyes. Turn them, then, to Scotland, where the system is and has been at work largely, and for a length of time, and what is the result? We see a country which, with the greatest disadvantages of soil, climate, &c. to contend against, has become the nursery of agriculture. We see a race of farmers intelligent and contented, and, not only able to contend with their more southern neighbours in the market, but actually to shew them the example in every thing which tends to the improvement of the science they practise. Nay more, we see a class of farmers who, with all their local disadvantages, have actually been able to endure, without flinching, the pressure of times which almost annihilated the agriculture of England. These are not mere assertions. A reference to the evidence of Scotch agriculturists, given before a committee of the House of Commons, appointed in 1836, to enquire into "agricultural distress," will prove all that has been asserted—and more. It proves that this state of things has been brought about by the *adoption of the lease-system and corn-rents.* Thus, from the evidence of Mr. Hope, Mr. A. Howden, Mr. J. Brodie, Mr. Oliphant, Mr. Bell, &c., we learn that the corn-leases had saved them from injury during the years 1834, 5, 6, &c., when prices were very low; and that, at that time, the condition of the farmer was satisfactory

—that improvements were progressing—that these improvements would not be made, had they no leases—that, especially in the Lothians, the state of agriculture had improved, and that it was owing to a change to leases on corn-rents. The evidence of one farmer, Mr. Robert Hope, the first in the list, shews this, as well as the whole volume. Thus, we are told by him, that he farmed 650 English acres—that in the last twenty years he had deep-drained a great part—that since 1793 it had been all *deep-drained* — that he had limed the whole farm at an expense of 9*l.* per acre—that he had laid out 240*l.* in furrow-draining during the last two years—that it could not have been expected that he would have done this without a lease—and that they had not suffered from low prices, owing to their lease-system and corn-rents. He tells us, too, that there were then about sixty-three or sixty-four steam-thrashing machines in the county.

The evidence of every other agriculturist is corroboratory of Mr. Hope's, all shewing great improvements, all declaring themselves pretty prosperous, and all ascribing it to the protection afforded by their leases upon corn-rents.

The able sketch of the Agriculture of Fifeshire by Mr. Buist,* affords us an equally satisfactory proof of the value of the system. "The length of leases," says he, "allowed in Fifeshire, is now almost universally restricted to nineteen years. The rent is, in a great proportion of cases, made payable by the fiars prices of grain. The tenant is now left at liberty to treat his ground as he may think fit, during the earlier portion of his lease, so as to give full scope to the employment of his industry, capital, and skill. He is, towards the closing years of his occupancy, bound merely to such a system as may prevent him from scourging the ground, so as to protect the interests of the proprietor." The result of this system will be seen, in the "more judicious system of arrangement in reference to rotation," in the spread of all the novelties of science, and the application of the skill of the modern mechanic (in the erection of steam-thrashing machines and in the improvement of the implements of agriculture), in the extensive outlay made by the tenant in draining, &c., and in the management of various fertilizers (especially yard manure), which Mr. Buist states to be common to the county.

But we are told that the condition of the cultivator has made an equal advance; that "the very happiest condition in the relations of landlord and tenant exist; that the proprietors themselves being mostly resident, and skilled in agriculture, can adequately appreciate and sympathize with his tastes, habits, and pursuits;" and that, at the same time, "the farmer himself is neither ignorant nor excluded from the more *elevated sources of intellectual, sentimental, or social enjoyment.*"

Here might we close, with this admonitory hint, that if landowners would see the same results generally diffused, they must use the same means; but we are reminded, that England herself is not without voices that cry out for the change. It is not necessary for us to look round where the landlord cannot, and the tenants dare not, expend money in fertilizing the soil. It is not necessary to note where the owner's absence, ignorance, or extravagance chills the efforts of tenants in the work of improvement—where the good "old English gentleman" has been succeeded by the stranger spendthrift, and the tenant's improvements are made to minister to his extravagance—where the speculating purchaser has made his investment a good one, at the expense of those farmers whose liberality best deserved his praise—where the loss of the husband has brought a loss of all; and the stranger has gathered the harvest that should have been reaped by the children. No; these are cases which require not to be particularized. When felt, or seen, no other evidence is needed to teach us that there should be a change; for one such example, I hesitate not to say, is sufficient to put a stop to the improvements—in fact, to draw the purse-strings of a thousand tenants-at-will.

But no more conclusive evidence of the evil operation of the year-to-year system, and the beneficial results of that we advocate, can be offered, than that which is afforded us in the "Report of the Evidence given before a Committee of the House of Commons appointed in 1836, to inquire into the state of Agriculture." From this, as we have before shewn, we learn that the Scotch farmers all stated themselves to be in a prosperous condition, and that this was chiefly *owing to their leases permitting them to make improvements,* and to their corn-rents *saving them from the effects of low prices.* On the other hand, the English farmers declared themselves generally to be in a bad condition, and that agriculture was, in many places, deteriorating owing to the low prices of preceding years.

We have here both effects and causes. It is not reasonable, then, upon such evidence, to assert that a system which produces such beneficial effects in one case, only wants trying to do the same in the other; but we have sufficient positive as well as negative proof of this, even in England. Many enlightened proprietors have already partially adopted the system, and even on these isolated cases, I am content to rest the issue of the case. For one bad farmer, upon a recent lease, I venture to say we shall find ninety-nine who are superior to their neighbours who are tenants from year to year: and it is only by comparing the two that we see the operation of each principle. Often, in such cases, where a farmer has his farm upon lease, in a district where they are uncommon, when his management is commended, it is urged, that "*he has a lease—his farm's like his own, and he can do as he likes.*"

If particular cases in point are required, I would refer the reader to the estates of the Earl of Leicester, and to a litile work on the "Connexion between Landlord and Tenant," by Mr. G. Webb Hall, for an account of their condition.

The estates of the Earl of Ducie are another example of the working of the system. The result of the trial may be gathered from his own estimate of the importance of the question given at a meeting of the Gloucester Farmers' Club.

"His opinion was, that till the question of leasing was fairly and clearly undersood, *all their efforts after improvement would fall short of what they ought to be.*

"For himself, he could say, that he never wished to see any man enter upon a farm *without a lease;* but, in return, he (Lord Ducie) must have intelligence. He would not give a lease to one of the old school—a man who, because his father and his grandfather did so and so, refused to change. To a man of intelligence, on the other hand, he would give the most liberal encouragement.

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* Quarterly Journal of Agriculture, vol. xi. p. 298.

"He was sure it was a most mistaken idea to suppose that their landlords would take advantage of their tenants, and raise their rents whenever there was a rise in the price of corn, still he would regard the tenant *as a fool who would sink money without the protection of a lease;* because, however much confidence he might have in the landlord, he had *no security* for similar treatment, in the event of a son or trustees becoming the managers.

"*No man,* in his opinion, *was justified in expending money in improvements, unless the value was secured to him, and to his children after him, by lease.*"

But we have now given sufficient, both of reason and of fact, to prove that the change we advocate is one that would tend greatly to the advance of agriculture. It only remains, therefore, for us to say, with the noble Earl, whose opinion we have quoted above (an opinion the more valuable because it is founded upon experience), that "*until the question is fairly and clearly understood, all our efforts after improvement will fall short of what they ought to be.*"*

Although I have already written at length, I cannot close this paper without making a suggestion to those *who will not give leases;* for I know, with Hudibras, that,

> "Convince a man against his will,
> He's of the same opinion still;"

and, therefore, though I could make out a case ten times stronger than I have, it would be of no avail with some. To these, then, I would say, "Let no private feelings cause you to neglect a public duty—the improvement of agriculture. If you don't feel disposed to give your tenants a reasonable security for the extra outlay of capital required to improve their farms, *take the work into your own hands, and charge a fair per-centage for the money you have expended.*" There is not a tenant in England but would pay it cheerfully; for if he can pay the present rent without the improvements, he would be better able to pay the increased one with them.

Let it not be supposed that I recommend this plan as a substitute for leases. By no means so. It is offered merely as a compromise, to those who *will not* give leases. And, if accepted—if only acted upon in all cases where the tenant has no lease; and acted upon promptly (and it is in the power of the landlord so to do), I need scarcely say that even this suggestion is of some importance at the present time—a time when the production of an *extra* bushel of corn, by an *extra* application of capital and skill, providing, as it does, an *extra* supply of food, and an *extra* portion of labour to our increasing population, entitles any man to the proud distinction of a *public benefactor.*

PRACTICAL HINTS ON AGRICULTURAL TOPICS.—The following information is condensed from Loudon's "Encyclopædia of Agriculture:"—In salt or curing butter, the use of wooden vessels is preferable, and these should be made from timber which has been previously boiled four hours, to free it from pyroligneous acid, or they should be made of the lime tree, which wood is without this acid.—To feed a horse when hard ridden, or if weakly and tender, it is often useful to give bread, or bread with ale; if this be not obtainable, horn down oatmeal and ale or gruel. It is of the utmost consequence if the journey be of several days' continuance, that the baitings are sufficiently long to allow the horse to digest his food. When any young man intends embracing agriculture as a profession, whether as ploughman, bailiff, steward, land-valuer, or rent-paying farmer, he ought to undergo a course of manual labour for one year or more, in order to acquire the mechanism of all agricultural operations. When the pupil is not destined for any particular county, then he should be sent to a farmer's in a district of mixed agriculture; as, for example, East Lothian, where he would, if placed in a wheat and bean culture farm, see at no great distance the turnip system and feeding; and a few miles off the mountain sheep farming or breeding. When the pupil is intended to be settled in any particular county, he ought to be sent to a county as near as possible of similar soil and climate, where the best practices are in use; as from all the turnip counties, pupils should go to Northumberland or Berwickshire; from the clay counties, to East Lothian; from a mountainous district, to in Cheviot Hills and Tweeddale, &c.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—You would confer a great favour on feeders of stock, if you could manage to procure the insertion of the *true* prices of meat in the London markets, in place of those at present quoted. Indeed the salesmen for their own credit ought to look to the thing, as owing to the present system they are, I may say, universally accused of selling the meat consigned to their care at very different prices in reality from what their returns to the feeder show. In Scotland I know that this feeling prevails so extensively that many farmers are deterred from feeding, as they believe they will not get the fair market price from the salesmen. For my own part I have not the smallest suspicion of the kind, as I am convinced the salesman whom I employ is perfectly above suspicion of any kind; but it is rather vexatious being induced to ship stock for the London markets in the confidence of getting a good price for it, and receiving by return of post a note of sale for what the salesman says, fetched "the top price of the market;" yet seeing in your paper that the top prices were well on to double the return transmitted to the unfortunate feeder, who could have realized far better prices at home. This I beg to mention is the usual course of matters so far as I have been able to ascertain. I am well acquainted with feeders in many parts of Scotland, and I never yet heard of one whose stock fetched the top price as quoted in your columns; nay, I rarely hear of one who reaches the lowest figure quoted. Some may say that the reason is because we do not send good meat to market, but I think that will not be a general opinion. If you wish to "do a good turn" to the farmer, I know few things that will give more general satisfaction, nor anything that will save temper to the same amount, as enabling the feeder to have a fair guess of what his stock may fetch; for at present he is utterly in the dark, till shocked by his return of sales, and is invariably disappointed.

Your obedient servant,
June 9th, 1842. J. MACKENZIE.

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* Since these sheets went to press, Professor Johnston has given to the world an able answer to the question, "*What can be done for English Agriculture?*" and to it I would refer the sceptical reader for further illustration of the value of the "means of improvement" which I advocate.

ON THE CULTIVATION OF GRAIN FOR THE PURPOSES OF FERMENTATION.

Sir,—I should before this have troubled you with another letter on agricultural matters, but from various causes I have been prevented; in this it is my desire to make known as far as I am able the principles which should be held in view in growing grain for making spirit or fermented liquors, commonly so called. To obtain from plants more of one peculiar constituent than they in a state of nature contain, we must supply them artificially with that food by whose absorption we expect to increase in the plant that particular substance which we desire to have in excess. This supply must necessarily be suited to the nature of the plant which it is desired to render more fruitful; before this can be accomplished, it must be ascertained what substances are capable of assimilation, what are injurious and what beneficial, the quality of the food supplied by nature, and the action of various artificial products on it.

We have, in the present instance, to deal with those substances contained in cereal and tuberose plants which are rich in carbon. In forming spirit the substances which tend to make grain nutritious to man and other animals are of comparatively little use. Starch is the substance which by fermentation of a peculiar kind is converted into sugar, and this sugar by the vinous fermentation is converted into alcohol or spirit of wine. Starch, which exists in all grains and most fruits, cannot support animal life alone, because it contains no nitrogen; it is nearly of the same composition as fat, as sugar, or spirit of wine—and how it is by fermentation converted into this last substance I shall now explain.

The composition of starch is carbon 10, hydrogen 10, oxygen 10, or nearly so. Starch is converted into sugar; the composition of sugar is carbon 12, hydrogen 12, oxygen 12; it is composed in the same relation. As the conversion of sugar into spirit involves one of the profoundest chemical theories, and as an explanation is not at all necessary to the object in view, I shall not detain you with it; it will be enough to state that spirit is formed from sugar by fermentation—that by fermentation sugar is converted into spirit and carbonic acid, by absorption of oxygen from the atmosphere. The composition of alcohol is carbon 4, hydrogen 6, oxygen 2. Carbonic acid is carbon oxygen 2.

I have endeavoured, in as simple a manner as possible, to show the conversions which take place in fermentation, sufficiently clear I hope to render it evident that from the starch alone in plants is spirit formed. Our object in growing grain, then, for these purposes, should be to increase this starch: whether this is practicable I am not able from practice to show, but some facts which have come to my knowledge render it extremely probable. Of wheat (though wheat is not used for fermenting purposes) which was sown and manured with nitrate of soda, we have a statement of computation.*

That wheat manured with the nitrate of soda would not produce so much spirit by 6.00 per cent. as that grown without. Nitrate of soda contains a great quantity of nitrogen, and nitrogenized properties were formed in the grain manured with it, at the expense of the starch. My design in writing these letters to you, Sir, is that a man of experience in farming, backed by acute perception, might have an opportunity of controlling the speculations of the mere theorist; a man who scarcely would know wheat from barley, may by combining his notions with those of practical men, do much good in the cause for which he labours; and that these notions may be recorded in a simple form, I shall at the conclusion of the year most likely publish in a separate form the letters I have had the honour of addressing to you.

I shall conclude this letter—the desultoriousness of which I hope you will excuse—by mentioning the plan in manures most likely to obtain the object desired, namely, the production of large quantities of starch in grain. Rich stable manure is of little service, rotten straw, decayed leaves, rags, and such substances which contain no nitrogen; while, at the same time, all those substances, such as guano, nitrate of soda, should be avoided.

Calculations might be made to show the increase by this means of starch and spirit produced; but this may be done with greater correctness by men of experience in brewing and distilling.

I shall in an ensuing letter make a few remarks on the artificial manures commonly in use, and very much puffed, of the service they are likely to prove, and their comparatively nutritious powers, begging my detaining you so long may be excused by your wishes for the good of the science of agriculture.

I am, most faithfully,
T. G. T. Phd. M. C. S.

To Jonathan Hutley, Esq.,
Of Hungary Hall, Essex.

NEW PLOUGH.—On Tuesday, a number of gentlemen engaged in agriculture assembled at Mr. George Paxton's farm of Hillhead, in this parish, to witness the performance of a plough upon a novel plan, and highly improved principle—the invention of Mr. David Goudie, foreman to Mr. Paxton. It is called the Antler Plough, from the resemblance of the head to a branch of a stag's horn—is very simple in the construction, having no wheels or springs; and the ploughman, without leaving his place, being enabled to turn sock, reist, sole, and side, with the greatest ease and convenience. It is admirably adapted for cross-ploughing; and, at the same time, performs the part of the grubber-harrow. Like the ordinary plough, it is worked with two horses, and will be of great advantage in preparing red land for green cropping or summer fallow. Those present, who were all practical men, expressed their high satisfaction with its operations, and had no doubt it would, in a great measure, supersede the present plough, when once agriculturists became aware of its peculiar properties. It was made by Mr. M'Kerrow, Beansburn, under the superintendence of Mr. Goudie; and is intended to be exhibited at the great agricultural show here, on the 20th May. It will be remembered, that at the former great show held here, Mr. Paxton introduced the grubber-harrow to this county, which was then, for the first time, exhibited here, and has since been almost universally adopted by the farmers throughout the county.—*Kilmarnock Journal.*

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* Agricultural Journal, ii. 143.

	Manured with Nitrate.	Grown without Nitrate.
Bran	25.00 p.c.	24.00
Gluten	23.25	15.00
Starch	49.50	55.00
Albumen	1.37	0.625
Extract	0.37	0.250
Loss	0.500	0.625

LORD JAMES HAY'S TILES.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—I send you a memorandum relative to Lord James Hay's tile, which has been lately introduced into this county by Mr. Murray, of Potmair, one of our most active agriculturists, and who has long held the opinion, and publicly avowed it, that a reduction in the protection to agriculture would not be detrimental in the ratio that the farmers apprehend, but that a lower price would stimulate to farther exertion and improvement to increase the quantity, as the farmers would not add to the price: and in corroboration of that opinion, he stated that on his own property it was evident to every person, that the farmer who held old leases at low rents, made much less exertion and less improvement on their farms than those who paid higher rents, and that poor lands would not be thrown out of cultivation; but in place of laying in miserably bad pasture, they would be drained, subsoil ploughed, and crossed, and the better soils thrown into pasture in place of being over-cropped, as at present. It is well known that the low price of manufactured goods forced the exertion of the manufacturers to the great improvement in machinery, and the inferior climate of Scotland obliged the farmers to exert themselves in that country, by lessening the expence of cultivation, and improving the method of farming, using two horse-ploughs, and drilling turnips, &c.

I remain, sir, your obedient servant,
Stirling, April 8th. W. M.

ADDITIONAL MEMORANDUM.

If any of your readers are anxious for more information respecting the formation of a good concrete for drains, let them turn to the "Annual Register," 1774, page 105, under "Useful Projects," and they will find a translation and quotation from the works of Mons. L'oriit, a Frenchman, which will fully repay their trouble. The concrete thus described, has been tried and used here by Mr. Murray with complete success, and it hardens much sooner than Lord James Hay's. Mine dust, from iron furnaces, mixed with hot lime and sharp sand, forms excellent concrete, applicable to drains or tiles.

These tiles are made of well-prepared concrete or mortar, composed of hot lime, sharp sand, and small gravel—water sand is to be preferred; the lime, sand, and gravel to be mixed in due proportion to the strength of the lime; the stronger the lime, the better the concrete, and it will harden sooner under water, and in damp situations. Lime, if 74 parts pure lime in 100, will require 1½ sand, and 3 parts gravel, to one of hot lime; and if the lime is ground, and the sand and gravel added to it before the water, the concrete will be firmer and harder than by watering the lime a little to slacken it. Lime of 90 parts in 100, such as Sauchie and Murray's Hall lime, will take seven parts of sand and gravel to one of lime: a bushel of such lime, so prepared, will make 160 tiles of a foot long. The lime, &c., must be well wrought together before being put in the mould, and also wrought in the frame on the moulds by the cast-metal trowels used by Lord James Hay. The shape, when formed, resembles the common clay tile. If properly formed, and well wrought, a very few days will harden them in any dry situation, although exposed to the weather the same as common flooring for houses. The concrete should all be used the day it is formed or wrought. The tiles may also be formed in the drain itself, which is much the preferable way, saving much expence and cartage. Thus, the concrete being formed, is carted to the field, and the drains being cut either by the spade or plough, or both combined, (the best method.) The sole of the drain is formed of the concrete, about an inch thick, or rather more, and then the drain tile is formed over the mould, the bottom of which mould is rounded like the top, thereby making a groove in the sole for the water, and is easier drawn out than when of the original shape; a wire is placed under the sole, of any size the drainer chooses, at every foot, and after the tile is formed, and as the mould is drawn forward in the drain, the wire is drawn up, cutting the sole and drain at every foot to admit the water, as the sole and tile unite together, and would exclude it; or an opening through the tile and sole may be formed by a mason's trowel thrust through the tile and sole, at a foot, or any distance that is proposed. In clay drains, a proportion of clay of one of the spadings may immediately be placed over the drain tile when formed, and before drawing out the mould, which will preserve the concrete from injury till it hardens; or the drain may be filled directly by first placing a wedge of clay over the concrete. In Dryfield, if the field is in pasture, a turf may be reversed, and placed next the concrete, and the drain filled. The concrete must be well wrought with the cast-metal trowels recommended by Lord James Hay, when formed either in his frames or in the drains themselves, and the concrete should not be too moist, if formed in the drain, and it will thus resist any pressure from above better than if soft and moist. A few hours in the drain will add much to its capability of carrying any weight, and then the drain may be filled with more confidence by those who are doubtful of its supporting the weight, or the drain may not be filled for some days, if that method is preferred. Mr. Murray has had them formed for a month in the drain, and standing well, and is confident that, so formed, they will answer, if the concrete is properly made. Mr. Murray has drains formed of clay on a mould, which have stood well for 20 years where the clay is of a tenacious quality. The advantage of the concrete is that it will suit any soil, kerse or dryfield. When formed in the drain, the moulds and trowels should be longer, say two feet in place of one.

A specimen of the tile, formed in the moulds, with soles of concrete, and also formed as in the drain, may be seen at Messrs. Drummond's, seedsmen, Stirling, where the frames, moulds, and trowels, may be obtained.

NEW PATENT.

William Crosskill, of Beverley, iron-founder and engineer, for improvements in machinery for rolling and crushing land, and in machinery to be used in the culture of land.—Enrolment Office, March 8, 1842.—The machine for the first-named purpose consists of a strong framing fitted with a pair of shafts for drawing by horses. Upon an axis within the framing are mounted, so as to turn freely and independently of each other, a series of rolling surfaces, the outer circumference of which is indented, so as to form angular teeth around it. Other teeth are fitted with their points in the hollows of the angular indents at right angles to the rolling surface; these latter teeth are not placed in the line of the radius of the rolling surface, but inclined to it, so that they enter the ground more perpendicularly, and thereby have an increased tendency to penetrate and break up heavy lands, clods of earth, &c. Each rolling surface being free to turn upon the common axis, independently of the others, will, it is said, be found much more useful and effective than those heretofore made. When the machine is to travel on roads, &c., two large running wheels are put on the ends of the working axis, and removed when the operation of the machine is to commence. The machine to be used in the culture of grass land consists of a strong framing mounted on four running wheels, the front pair having a locking motion; the object of this machine is to cause narrow cuts or trenches to be formed, at short intervals, through the turf down into the soil, and to deposit seeds and manure in such cuts or trenches. An axis or shaft lies across the front of the machine, and carries two arms, which, by connecting links, move bars that slide in grooves at the ends; these bars are affixed to a series of blades or cutters (six in number), by passing through an opening formed in the upper part of each cutter. These cutters pass down through slots or openings in a horizontal plate; by this arrangement, whenever the cutters become clogged, which they are very likely to do, the man attending the machine lifts the cutters through the plate, which instantly clears them from the accumulated soil or turf. In order to lift the cutters, and also to regulate the depth to which they shall work into the ground, there are two side levers attached to the axis or shaft, having sliding weights, in order to regulate the pressure used to force the cutters through the turf. Other levers connected to the foregoing pass over them to the hinder part of the machine, where they terminate in handles within reach of the attendant. An ordinary drill is placed upon the machine, and motion communicated to it from the driving wheels by toothed gearing, in the usual manner. The claim is—1. To the mode of applying the teeth of the rolling surfaces for rolling and crushing land; also, the placing rolling surfaces having teeth on the outer circumference, in such manner as to turn independently of each other.—2. To the mode of arranging a series of cutters in a suitable carriage, for producing narrow trenches or cuts through the turf of grass land, whereby such cutters can be lifted and cleared from time to time, and combining therewith suitable drills for sowing seed and manure in such cuts or trenches, as above described.

GENERAL AND UNIFORM DRAINAGE.

SIR,—The just importance attached to the subject of drainage, as evinced in the communications of many of your correspondents, induces me to trouble you with a few remarks upon the necessity of a *General Drainage Bill.*

Without detailing reasons why the present period is the most proper time to discuss the matter, and for the legislature to grant the measure, I will state those benefits which more immediately strike me as sure results of a national system of uniform drainage; and whilst alluding to the difficulties which stand in the way of such a measure, I will endeavour to show that the objections which constitute those difficulties, are not of sufficient moment to restrain all efforts in the cause. It matters little what sort of arguments, political or philanthropical, arise upon the fact that in England there is a greater demand for wheat than at present our lands produce. We all know that such is the case; and I think I may venture to state that the same unanimity of opinion exists on the hypothesis suggested by this certainty, viz., that if we have the power to grow a sufficiency of wheat for our own consumption, as an agricultural nation, it is our duty to do so.

Our power to effect this object has been already partially demonstrated by the ascertained fact that the growth of wheat in this country has increased, of late years, in greater ratio than the population; and the means by which this has been done is the improved and improving state of the art of culture and implements of husbandry, and our scientific knowledge of soils and the effects of vegetation upon them.

But why should the country await the tardy advantage science is gaining over prejudice to make up a deficiency of which we are all cognisant, when by one energetic step of the legislature the desideratum would be gained? Liebig says, that "a rational system of agriculture cannot be formed without the application of scientific principles;" and another very able writer says, "that science can never safely advance until she has laid a sure foundation upon which to build her collected facts." Now, the allusions of both writers are each very different from the point to which I would wish, in contradistinction to them, to call attention, as being really tangible ground upon which to lay the desired foundation. With them their object is to make theory the basis of practice, while I am of opinion that *practice* would become the certain forerunner of useful theoretical knowledge and successful experiments; for without land is rid of its superabundance of water, manure remains in nearly the same state in which it was applied, with little or no effect upon the crops it is intended to nourish, and any other improvement of which chemistry may be the agent, must be imperfect so long as land is in that state. The wheat lands of England are for the most part composed of those lands, which if not already drained are those which require draining; and therefore it is evident if we are to reap the greatest benefit possible from the progress of science, our first step should be to prepare our lands, and render them susceptible of those improvements which science may from time to time dictate, and by which the deficiency we now suffer under, will, if not immediately, be ultimately made up.

Were any collateral reasoning required why all should agree upon the necessity of a General Drainage Bill, I would allude to the possibility of a repeal of the Corn Laws; and without touching the treacherous ground of politics, I would ask what is to become of those poor wet lands which now yield to the farmer some two or three quarters of wheat per acre, and to the landlord a rent of from 10s. to 20s. per acre per annum? If the answer is, that such lands will return to their former state as "coarse wet pastures," I will ask, will the results likely to accrue from Sir Robert Peel's tariff enable the farmer to pay for such lands a rent, an average rent of 7s. an acre? And if we make an estimate of the gross extent of such lands, we shall find them to amount to something like two millions of acres.

And then, as another reason why the matter should be duly considered, I would ask, allowing that it will be some years yet before a repeal of the Corn Laws, should we not use the interim in providing for the evil day? Lord Stanley has said, when speaking of draining, that "the man would be thought to have conferred no trifling benefit on his country, who should add one bushel an acre to the quantity of wheat produced by the wheat lands of England; and that there were hundreds of thousands of acres which are capable, by improved cultivation and drainage, of producing ten or fifteen bushels per acre more than they do."

Although his lordship stated in both cases facts which no one will deny, and in his own allusion to drainage prescribed a means of obtaining the benefit desired, he was in error in alluding to any *one* person as being sufficiently powerful to dictate any improvement which would be generally adopted. While bigotry and prejudice exist, such a thought is absurd. It rests with the legislature to confer the benefit; to pass such a measure, framed on correct principles and basis, as shall dictate a general drainage of all those lands which require draining, without that arbitrary interference with private rights which landowners and all other owners feel it difficult to bear. If we inquire into the cause of the opposition which is manifested against a compulsory drainage act, and the reason why we have not already such a measure in operation, we shall find that our legislators themselves are averse to any such proposition, and will not entertain it.

But, in my humble opinion, it is possible to frame a measure that shall not materially infringe upon private rights, and yet induce a thorough and uniform drainage throughout the whole kingdom.

Let a commission of duly qualified men be appointed to direct the clearing of outfalls, and the construction of main receivers along the vallies of the country to communicate with those outfalls, and let such body of men confine itself to this duty; the effect of which would be the removal of all stagnant waters which now congregate on the lands of a vast many valleys, and which do such immense injury to the arable lands, as was signally instanced during the last winter. Getting rid of these waters which stagnate *on* the land, will assuredly lead to the expulsion, by private enterprise, of those waters which would still remain stagnant immediately *under* the surface of the land, and at a very trifling expense compared to what it would be had the farmer to find outfall throughout adjoining lands.

Then as to the expense of such an undertaking, I am sanguine enough to believe, that if the commissioners were to systematize the main drains, so as to concentrate the water at particular spots, a use might be made of it for agricultural and manufacturing purposes, which would more than compensate the expense. It is obvious from practice in various parts of the country, that both in irrigating lower lands and as a motive force, such water may be most profitably used; and it cannot be doubted that upon a general measure of the sort proposed, some other purposes would be originated, which cannot be contemplated at the present moment. But as there may be considerable doubt on this head, I will not place greater stress upon it than recommending this branch of hydraulic engineering to the attention of the scientific, as an important and national object.

Our annual growth of wheat is less than the demand by 1,500,000 quarters, to which must be added as much again for seed corn, making a deficit of 3,000,000 quarters required for food and seed, which, taken at the average of the last fourteen years, amounts to nearly 9,000,000*l.* per annum; a loss to this country, because it is so much gained by those nations who, in time of war, would compel our dependance on our own resources; and this sum is something to be considered when the great cost of national drainage is mentioned as a veto to the undertaking, as well as the fact that by a measure such as I have presumed to propose, a *present evil* would become a *future good*, by making a profitable use of injurious waters.

I am, your obedient servant,

9, *Gray's Inn Square.* J. BAILEY DENTON.

ST. PETER'S FARMERS' CLUB.

FIRST ANNUAL REPORT.

[Hailing with satisfaction the establishment of every new farmers' club, and concurring in the sentiments expressed in the introductory part of this report, we give it entire.—ED. F. M.]

Having arrived at the anniversary of the formation of your club, you are now expecting your secretary to furnish you with your first annual report. It may not be either essential or desirable, that he should now occupy your attention in any way but by reading the minutes of the several meetings you have held during the year; he feels inclined, however, to embrace this opportunity of expressing his increased conviction of the utility of your club.

This utility is apparent if it is considered as one amongst many of the same class, by means of which a more clear and comprehensive knowledge of agriculture will be constantly obtained.

He is happy to find that farmers' clubs are springing up in almost every locality throughout the land. That the opinions of respectable bodies of practical men, on the most important topics connected with corn and cattle, are constantly coming forth to the world. To the opinions of associations, constituted as yours is, he feels willing to pay the greatest deference. Here, as you know, every man is free, and every man is ready to express his ideas; but nothing is allowed to form part of a resolution unless, in the opinion of all, it will bear the scrutiny of common sense, and stand the test of experience. Resolutions formed and adopted under such circumstances every one who is desirous to learn must consider of no small importance. And it is from the reports of the many farmers' clubs now organized throughout the country, that the honey for which these many hives have toiled is richly emanating, of which all may most freely partake, and under the salutary influence of which all may ply the wing of industry afresh.

While on this point, it might just be observed, that in these matters we should be as ready to communicate as to receive. This consideration, though your pretensions as a club are not great, would induce your secretary cheerfully to accede to the printing of your annual report, if that should be your wish. True it is, you have no lengthy details of experiments, or deep researches in chemistry—no pretensions to anything above common sense and common practice—to publish; yet though smallest in the whole constellation, the cheering light of which is so widely diffused, there need be no reluctance on your part to mingle your ray with the rest.

Much more might be said on the benefits of your club in common with other farmers' clubs; but to its members individually, its advantages are much greater than are likely to be obtained by them from any other. There are certain modes of operation specially adapted to certain soils and situations, which puts the highest value on the practical knowledge of men who are farming in the immediate neighbourhood, and gives the greatest portion of the benefits of a farmers' club to its own locality; that knowledge which has been tested, and which, in the main, has succeeded on the identical spot which we have to cultivate, is of superior importance to us. On this account, your secretary is right glad that there is not only an "Isle of Thanet Farmers' Club" (to which it is the privilege of several of you to belong), but that here is also a farmers' club at St. Peter's, founded on similar principles, and pursuing the same object. And taking this view of the matter, he cannot help feeling proud that you have some amongst you whose long experience, connected with a constant effort to improve and to excel, has placed them in high repute, and renders it at once the wisdom and the gain of those of us who are younger and less experienced, to listen to their advice with respect, and to adopt many of their plans with eagerness.

It may further be observed, the utility of this club is seen in its tendency to cultivate amongst its members the most neighbourly and friendly feelings. Not an individual but manifests an anxiety that all he has discovered, and all he knows, may be productive of an equal amount of good to others. And surely the many manifestations of such sentiments and feelings made at your several meetings, can never fail to render your friendships more extensive and more lasting.

These are a few of the advantages which have already resulted from your association; a continuance of these may be anticipated, and you may also hope that its benefits will be still greater. The time may not be far distant when you may have in circulation many more of the most useful publications of the present day, calculated to increase your capabilities, and to improve your practice. You may also be able to form some plan for the encouragement of your own servants and labourers. Most of you indeed belong to another society that is liberal in rewarding them, in common with other deserving individuals; yet, in addition to this, it might afford them increased encouragement if those who are employed in this corner of the Island were allowed to share in the benefits of your club.

Not to trespass further on your attention, these introductory observations shall be closed with one remark, which is suggested to the mind of your secretary by what is now taking place in the legislature of the land. We are living at a time when it becomes every farmer throughout England to cultivate the most industrious and frugal habits, both indoors and out. At your first meeting after the organization of your club, you deprecated the conduct of her Majesty's late Ministers in their attempt to remove the protecting duties on corn, and you may have little less to fear from the project of those at present in power. Your struggle in consequence of the alterations now making will be a hard one; but for our own sakes, for the sake of our families, and for the sake of our country, let us try, and try heartily, and try cheerfully; and may the sunshine, and the showers, and the blessing of Heaven, sustain and succeed our efforts!

AT A MEETING OF FARMERS, HELD AT THE WHEAT SHEAF INN, ST. PETER'S, APRIL 20TH, 1841,

It was unanimously resolved—

First.—"That a farmers' club be organised at St. Peter's."

Second.—"That care shall be taken in framing the rules of this club, and in calling its occasional meetings, that it shall in no way interfere or clash with the Isle of Thanet Farmers' Club."

Third.—"That Mr. W. Manser be the chairman, and Mr. James Smeed the secretary, for the first year."

Fourth.—"That the rules of this club be forthwith prepared by the chairman and secretary, and submitted to the club at their next meeting, which is to take place at the Wheat-sheaf Inn, on Tuesday evening, April 27th, at six o'clock."

SECOND MEETING, APRIL 27TH.

The rules were submitted to the club and adopted unanimously.

THIRD MEETING, MAY 25TH.

At the commencement of this meeting the corn law question was discussed at considerable length. The conduct of her Majesty's Ministers, in bringing forward their measure relative to a fixed but low duty, at the time and in the manner which they did, deprecated in the most unqualified terms; and the propriety of petitioning both Houses of Parliament for a continuation of the present protecting duties decided upon.

The next subject introduced was respecting the wire-worm.

Question. — What are the best preventives where the ravages of the wire-worm are dreaded, and what are the best remedies when it has commenced its depredations?

This was thought to be an extremely difficult subject, and yet (to a St. Peter's farmer) one of the most important that could possibly be introduced. Various experiments, with their results, were detailed, and after much discussion it was resolved—

"It is the opinion of this meeting that the subject is surrounded by much that is obscure and mysterious; still, as a preventive of the ravages of the wire-worm it is desirable in our light soils to plough early, to bury as little stubble as possible, then by bawking, broad-sharing, and similar processes, to expose the surface of the soil to the air during the winter and early part of the spring. And further, it is thought of great importance, where land is subject to wire-worms, to manure it well. Then, as to remedies when the depredations of the insect are discovered, it is recommended that as much of the surface of the soil should be moved by hoeing or harrowing as can be possibly without destroying that part of the crop which has escaped the worm; that this should be attended to at once when the operations of the destroyer are discovered; and that afterwards means should be employed, according to the state of the land, calculated to produce a tolerable degree of firmness."

FOURTH MEETING, JUNE 22ND.

The question first discussed at this meeting was —What is the simplest and most effectual remedy for hoven cattle?

After considerable discussion of the subject, in which many curious circumstances connected with this evil to which cattle are liable, and some very singular experiments that have been resorted to by members in particular cases, had been detailed, the following resolution was passed unanimously:—

"It is the opinion of this meeting, that the simplest and most effectual remedy for hoven cattle (so far as our practical knowledge extends) is to administer linseed oil or other oily substances of a similar nature as quickly as possible, a pint to a dose, and that this dose may in a very short time be repeated with safety and good effect, if the first administration should fail to give a satisfactory amount of relief."

The next question introduced was—Which is the best way to weaken and as far as possible to destroy the common thistle?

Various opinions on the subject were expressed. It was stated that salt sown on the stump of a thistle after it had been cut off would produce certain death. But as the adoption of this remedy was thought in most cases impracticable, it was not recommended. The meeting agreed in the following resolution:—

"That as we find it the order of Providence that the earth should of itself bring forth 'thorns and thistles,' we do not expect to make discoveries that will enable us fully to eradicate the weed, but we think the best means of checking its growth and weakening its strength is, first to allow it to attain a state approaching its perfection, and then to cut it off just above the surface of the soil."

Much conversation then took place as to which were the best sorts of potatoes to plant in this locality, and which the best mode of planting them. But as it was thought the subject required more time than could possibly be devoted to its consideration at this meeting, it was agreed it should be resumed at some future time, and no resolution was passed touching this question.

FIFTH MEETING, JULY 20TH.

It was agreed, that as we had now arrived at a period when we were with eagerness and anxiety anticipating harvest (although no notice had been given of the discussion of any question having particular reference to this event), it might be both seasonable and profitable, at this meeting, to consider in what state it is best the different kinds of grain should be cut and housed, and which are the best modes of doing it.

The discussion resulted in passing the following resolutions.

First, with reference to wheat.—We think wheat should stand till the grain has lost its milkiness; but we feel unable to lay down any other rule that will apply in all cases, some sorts requiring to be cut much earlier than others. We think the mowing or striking in of wheat with the cradle-scythe, to be gathered and bound in sheaves directly, the best mode of harvesting it, as it is thereby better secured from the evil effects of rainy seasons than by any other mode that we are acquainted with, and we get by it a greater quantity of straw, which is generally valuable in this neighbourhood.

And further, as wheat will endure more wet without sustaining injury than some other sorts of grain, and as dryness is an essential quality, we think it not advisable, by any means, to hurry it into the barn in bad condition, although we think it does not require to be so particularly dry for the stack.

Second, as to barley.—It is the opinion of this meeting that barley should not be cut till it is tolerably ripe, has lost its red streak, and begins to curl, and then that sufficient time should be given it in the swathe where it is lain by the mower to get thoroughly dry if possible; and that it should then be bound in sheaves, and carried to the barn at the same time, if circumstances will allow.

Third, as to oats.—It is our opinion that oats ought not to stand till they are fully ripe, especially where they are much exposed to winds, as in this neighbourhood. Where they are slight we recommend the same mode of cutting as is commonly adopted with barley. When they are stout we think it best to strike them in in the same manner as we usually do wheat, and then to gather them out and lay them in swathes till they are well ripened; then to bind them in sheaves and stand them in shocks till they are fit for the barn.

Fourthly, beans.—We think before beans are cut or pulled, the greater part of the pods should be black; that they should be bound and stood up as soon as possible after they are cut or pulled, care being taken that they are not wet at the time, especially if there is much greenness about them, and that they should be left in the field, in ordinary cases, till they are quite hard.

SIXTH MEETING, NOVEMBER 14TH.

The potato growing question was discussed, and the following was taken as the general sense of the meeting:—

First, as to plants.—That a good-sized chat may be used with advantage. That if a cut potato is used, each piece should contain at least two eyes, and the cutting should be performed a day or two before planting.

Second, as to planting.—That the soil cannot be too good, or too well manured. That it is best to plough the land intended for potatoes, and to put on the dung early in the winter, that it may have the benefit of alternate frosts and rains. That the potatoes should not in any case be planted more than nine furrows to the rod, nor less than fourteen inches apart, and sorts requiring greatest strength of soil should have more room given them. That they should not be planted deep. That it is best to make the furrows with a mould-board plough, and to bury the potato by splitting the furrows if the weather is moist at season time, if not, to plough the land in the usual way, and to drop the plants in each alternate furrow. The land to be harrowed and rolled afterwards when a suitable opportunity presents itself.

Third, respecting their treatment.—All agreed that as soon as the potatoes could be seen in furrows, if the weather was suitable, they should be hoed and shimmed. That it is desirable to put a little earth to them as early as convenient when once they are of sufficient height to bear it. And so to proceed to the completion of the work as fast as the potato proceeds in growth, thus avoiding the necessity of working amongst them after the young potato is formed. That in the final earthing care should be taken not to leave the furrows sharp at the top.

With regard to getting up and storing, it was considered that so much depends on the weather, the soil, the situation of the field, whether they are to be kept a shorter or longer period, and other circumstances, differing in some respects in almost every instance, that it was thought useless to lay down any rule respecting this matter.

SEVENTH MEETING, JAN. 11TH, 1842.

The first question discussed was respecting books for the society, which issued in the secretary's being commissioned to purchase several before the next meeting.

The next subject introduced was the best means of bettering the condition of our servants and labourers.

It was considered of the utmost importance to bring them, if possible, to provident habits—to induce them to become depositors in savings' banks—to join benefit societies—and to do all that can be done to secure their own independence, and lay by for themselves.

The good effects of such efforts for their welfare was pleasingly illustrated by two anecdotes which a member mentioned of his own servants. One, a waggoner, when asked to remain another year in his situation, requested of his master an increase of wages; this had been done for him year after year—still his money was spent as soon as it came into his possession. His master, however, told him on the occasion referred to, that if he made a further advance of his wages, he should insist upon it that the amount of increase, together with an equal amount of the wages then about to be paid to him, should be deposited in the savings' bank. To this proposal the waggoner consented, and by that means was induced to commence laying by for himself, a practice which he has since continued.

The other instance was of a female servant, who had left in the hands of her mistress a portion of her wages, that her mistress might purchase her a silk gown. Instead, however, of laying out this money on silk, the first opportunity was taken to place it in the savings' bank. When her mistress returned home after this, she told the servant what she had done, and endeavoured to convince her it would be much more to her advantage than if it had been spent as she desired. The girl was for some time much displeased about it. This happily gave way to better thoughts, and she soon began to deposit for herself; she has continued to do so, and has just received a reward of two guineas from the "Isle of Thanet Agricultural Association," as the female servant longest a depositor in the savings' bank.

Eighth Meeting, February 15th.

The question discussed was respecting seed-growing in general.

First, canary.—Resolved, "That it is essential to give canary a good tilth, equal in strength to what is considered desirable for wheat—to plough the land soon after harvest—and to broadshare it before sowing. That the best mode of sowing canary (in ordinary cases) is with the drill machine, twenty-two furrows to the rod, and five gallons of seed per acre. And it cannot be sown too soon after Christmas, if the weather and the soil are suitable."

It was further considered of importance to keep canary well hoed in the spring.

The whole of this resolution was passed unanimously, except that part relating to the number of furrows it was best to put to the rod, upon which one member expressed his opinion as most decidedly preferring sixteen to twenty-two.

Second, clover.—Resolved, "That clover should not (in any case) be sown on the same land frequently. That, if possible, we should avoid sowing it after two white straw crops. That it is generally most kindly in deep loamy soils. That the ground should be quite clean, and that the best tilth for it is amongst barley sown on a clear fallow. Two gallons of seed per acre."

Third, spinach.—Resolved, "That it is best to sow spinach on a barley-gratten tilth, that has been dunged and ploughed, in the early part of the winter, and broad-shared shallow. That the ground should be got quite fine before sowing, and if a good season can be obtained, the beginning of February is the best time to sow. The best quantity of seed to the acre is three gallons of rough, or one gallon of round. The best mode of sowing is broadcast, on furrows struck shallow, by a plough with the mould-boards level with the chep. Ten furrows to the rod. That after sowing it should be first harrowed in with the furrow, and afterwards crossed. That it requires well hoeing, shimming, and rolling."

Fourth, radish.—Resolved, "That radish (like clover) will not bear repeating on the same land often. That a barley-gratten ploughed early, and broadshared somewhat deeper than for spinach, is a very good tilth. If the land is in tolerable good heart, we do not think it desirable to manure for radishes, but for a succeeding crop it is quite essential to manure after them. One gallon of seed is considered the best quantity per acre, drilled in furrows about eight to the rod, is best for the common radish, and ten to the rod for the turnip-radish. It is not wise to roll this plant quite so much as spinach."

It was remarked that it is not necessary to broadshare so deep for the turnip-radish as for other varieties, and that pale salmon is too tender to bear much rolling.

Fifth, sainfoin.—Resolved, "That it is best to sow five or six bushels of sainfoin seed per acre, amongst oats or wheat that is not likely to prove rank and strong."

It was observed that drilling the seed with a common drill-machine, between the furrows of drilled wheat, has been found a good plan. And when sainfoin has come thin the first year, it has sometimes been found beneficial to leave it for seed. In this case a good harrowing in the autumn is advantageous.

Ninth Meeting, March 15th.

The subject of seed-growing was resumed, and the following resolution adopted respecting lucerne:—

"That lucerne should not be sown on the same land often. That the tilth should be quite clean and in good heart. That it is best to sow the seed amongst oats at the time they are sown—two bushels and a half of oats, and thirty pounds of lucerne seed per acre."

It was remarked that lucerne was not equal to sainfoin or clover for hay, but valuable as green-meat. That it should not, in ordinary cases, be left to stand more than six years. Frequent top-dressing is highly beneficial. As the root is remarkably hardy, it is not very susceptible of injury from being fed off by cattle at the end of the summer, but in no case should it be cut more than three times in one year.

It was resolved, "That the club should hold their first annual dinner at the Wheatsheaf Inn, on the 12th of April."

April the 12th.—The first anniversary.—Nearly all the members dined together at the Wheatsheaf, and were joined in their festivity by some of their neighbours and friends, who are not agriculturists.

After dinner the report was read and ordered to be printed, under the direction of the chairman and secretary.

At the unanimous request of the club, Mr. Manser and Mr. Smeed consented to retain their respective offices during the ensuing year.

The cash account was presented and passed.

ON CHEESE MAKING.

IMPORTANT TO DAIRY FARMERS.

(TO THE EDITOR OF THE DUMFRIES TIMES.)

SIR,—Having been in the habit for several years of receiving a number of dairies of Scotch cheese, and having noticed their great deficiency in comparison with English cheese of the same richness, I have been induced to turn my attention to the different methods used in the two countries. In the course of last summer, being over in Wigtownshire purchasing cheese, I availed myself of that opportunity to make enquiries, and to witness the different processes in cheese making adopted there, and on my return contrasted them with those adopted by our Lancashire farmers.

The faults found by English purchasers with Scotch cheese are—1st. *their soapy nature when cut.* Instead of cutting mellow and flaky, they cut as solid as clay; and when exposed to the air, they begin to cleave, and appear as if the curds had been placed in layers. 2dly, *their want of firmness*, especially in warm weather, when they seem as filled with air. This arises principally from not being salted on the outside. 3rd, *their want of a ripe smart flavour*, being very insipid, and eating like short-baked bread, instead of a little brittle.

In consequence of these faults, the Scotch farmers shut themselves out in a great measure from the English market; are every year getting more disliked; and only find a ready market when English cheese are extremely scarce. Nearly all the Scotch cheese are of richer quality than English, and the deficiency is altogether in the management.

In Scotland, the making of cheese is intrusted principally to hired servants, or "dairy-maids;" here, in Lancashire, the farms are much smaller and the farmers' wives, almost without exception, act in that capacity, besides attending to their other numerous duties. From this it will be seen that the process takes up *much less time* with us than you devote to it; we not only save time, but often make *superior cheese of inferior milk.*

I shall now proceed to point out the difference between our management and the Scotch. With you, a cheese is generally made as soon as the milk is received from the cow, (i. e. night and morning,) which in summer time is too great a temperature of heat. With us, they are made in the morning only, and the milk received at night is reserved in large earthen mugs. In the morning in summer, the cream is skimmed off the night's milk, and poured into what is here called the ironing tub, a large oval-shaped tub which contains the milk during the process of curdling; the new milk is then poured upon it, and the skimmed milk is added, which reduces it to a lower temperature than if just received from the cow. When the weather grows cooler, it is necessary to *heat part* of the evening's milk, which is best done by placing it in a tin vessel into a boiler partly filled with hot water, (upon the same principle as a joiner melts his glue) for a short time; the quantity necessary to be heated will be best found out by experience, suffice it to say that the whole quantity of milk, evenings and mornings, when ready in the tub for receiving the "steep," should only be of a *perceptible warmth.*

Having your milk a proper heat, you next add what is here called the "steep," being the liquor from a solution of "rennet" in water; this, with you, is generally made *only once a year*, in spring, and bottled up for use; with us it is made *fresh every day*, thus:—a piece of rennet is put into a cup partly filled with cold water, left to stand 24 hours, and it is then ready for use. The quantity of rennet necessary for each cheese I have not been able to ascertain, but it will be easily learnt by experience; the great error arises from using too much, which renders the curds tough, and prevents the whey from being so easily pressed out; *too little cannot be used if it will curdle the milk*, that being all that is required.

The next point is the length of time which should elapse from putting in the steep to the milk to its arriving at a proper consistency, or ready for (what is here called) "breaking up;" this, with you, takes about *half an hour*; but with us, *from one hour and a half to two hours.* The less steep used, and the cooler the milk (*which is the best plan*), the longer it will take to curdle; but your curds will be very tender, like jelly, and the whey will be easily pressed out. This is a very nice point, and deserves great attention.

Now we come to another part, that is, the length of time from "breaking up" the curds in the tub to crushing or grinding them through the "curd crusher" or mill. This part is conducted *very differently* with us from what it is with you. After the whey has got from the curds in the tub, it is cut into large slices and piled one against another in the drainer, in a concave manner. The drainer is only a large vat, pierced with *innumerable holes* both in the rim and at the bottom, so as to allow the whey to run out without obstruction. The drainer is placed over the ironing tub, and the curds are then pressed gently with the hands until they get solid, the whey running out freely; it is then cut into slices as before and pressed in like manner; this is repeated three times, by which time nearly all the whey is pressed out; it is now put through the mill *two or three times* so as to grind the curds fine. Before the curds undergo this process they should handle soft and tender, but with you they feel tough; you also neglect to grind them *fine enough*, and when they are cut with knives, as some do, it is still worse, and this plan ought immediately to be abandoned. With us, before the introduction of the mill, they used to squeeze the curds in their hands till they issued out between their fingers, but this was very laborious; however, in cold weather, it is still adopted (even where the mill is in use when the weather is warmer,) as the heat of the hand makes the curds of the proper warmth, which they are liable to lose at that season. The crushing of the curds should not take place later than noon, after having been about *three hours in the drainer.*

After the curds are crushed they are placed in the "cheese-vat" (which is suspended over the "ironing tub" as before,) and a mug, which has been previously heated, is inverted over it for about an hour, when the whey drops out quickly, but of a whiter colour than before; at the expiration of that time, the lid of the vat is put on, and a weight by means of a lever, is placed upon it, which you keep gradually increasing during three hours; but the weight and lid must be taken off several times during that period, and the curds stabbed (with a piece of wood to supply the place of a fork) in eight or ten different parts of the cheese, which assists the whey to drop more freely than it otherwise would if allowed to get *too solid*;

the cheese should also be *taken out of the vat once and turned* (as well as stabbed) during the process. At the end of three hours the weight is taken off altogether, and the cheese *pressed heavily with the hands for about an hour*, stabbing it very often. The whey which runs off after the curds are put in the vat is very useful in feeding the pigs; some churn it, but the poorer it is, the better the management.

It is now, we will suppose, about five o'clock in the evening, and the curds are pressed as free from whey as possible; they are now turned out of the vat, replaced with a cloth around them, and then put to press. The last duty, before retiring to rest at night, is to turn the cheese in the press and substitute a fresh dry cloth for the first one. Next morning it should be taken out and well *rubbed with the hands with fine salt all over for some time*, then replaced with a dry cloth and a little salt next to the cheese both under and over; it now remains in the press until five o'clock in the evening, when the next day's cheese is ready to take its place.

You will perceive that there is *no salt whatever used inside the cheese*, all on the outside. After the cheese is finally taken out of the press, it should be dried with a coarse towel, and then it is ready for further salting, which is very easy and simple. You have only to fix upon a suitable cool place, fitted up with stones to hold seven or eight cheeses, then place a little salt on the stone, place your cheese upon it and add a little on the top of the cheese; *keep replacing it as it melts*. The time necessary for this purpose is from five to eight days, according to the size and *thickness* of the cheese; *thin cheese needs but little salt*; the quantity of salt requisite will be best learned by experience.

You will see by this that the *whole process of making and pressing each cheese only requires 24 hours*. Nearly all our farmers make only one cheese in the day, and have in use only one *cheese vat and one press*. The place used for making cheese with us is not an out-house, but the kitchen, and they are kept nearer or further from the fire according to the weather; in cool weather, being within a couple of yards of the fire grate. The curds should always be kept in a *gentle warmth*, but great care should be taken *never to allow them to be overheated*. Extremes are dangerous either way.

After the cheese is salted, our next business is the *proper place for keeping*, which is very different with us from you. The cheese, after being removed from the salting stone, is well dried with a coarse cloth, and placed on shelves in the kitchen, which are generally affixed to a beam not more than two yards from the chimney, or on one side of the chimney (something like a cupboard without a door); it is kept there about a fortnight, and then taken to the cheese room, one cheese being taken up as another is received.

The cheese room is generally over the kitchen, being warmer than any other part of the house; but it is not important what room is appropriated to this purpose, provided it is *not damp*, as the necessary heat can be produced by *stoves*, which in summer will not often be necessary. I cannot say what degree of heat the cheese rooms generally are, but the cheese should always *feel a little greasy when handled*, and never be allowed to coat as yours do. Extremes of heat and cold in the *making* or *keeping* of cheese are injurious. Most likely your Scotch farmers will feel timid at allowing their cheese to sweat gently, but they need not be afraid, if they adhere to the plan I have laid down as to making and salting; it is only by proper keeping that cheese arrive at a *ripe smart flavour and cut mellow*, which enables them to find a ready market. Your cheese will also be able to stand shipment in warm weather, which at present is very dangerous, the heat rendering them so soft and spongy.

There is another suggestion which I would name, but which should have been inserted at the commencement of this letter. I would advise your farmers in place of making their cheese *white to colour them*, which is done almost without trouble, by rubbing a little cheese colouring on a piece of earthenware into the milk (just before putting in the steep) until it gives it a deep straw colour. I am afraid some little difficulty will be found in obtaining suitable annatto, it being so little used in Scotland. If this should be the case, if parties will write to me, enclosing a post-office order, I will procure it for them, and forward it any way they may request.

I shall be glad to give any farmer additional information or explanation, if they will only be at the trouble to write to me, which the cheap postage enables them to do with little expense. I only regret, that owing to my numerous engagements, this letter is written in a very hurried manner, and necessarily defective in point of language, arrangement, &c.; but I hope that what it contains will be of use to the parties for whom it is intended.

I am, Sir, your obedient servant,
WILLIAM LIVESEY.
8, *St. Ignatus-square, Preston, Lancashire.*

COMPARATIVE POSITION OF BRITISH AND FOREIGN WOOLLEN MANUFACTURES.

ENGLAND—TAKEN FROM PARLIAMENTARY RETURNS.

Exported in the years ending Jan. 5.		1816.	1831.	1841.
Cloth	pieces	638,368	388,269	215,746
Coatings, &c.	ditto	88,588	22,377	16,094
Kerseymeres	ditto	92,696	34,714	27,122

PRUSSIA—TAKEN FROM THE OFFICIAL RETURN MADE TO THE PRUSSIAN GOVERNMENT.

	1833.	1840.
Exports of woollen manufactures per Prussian league....cenrs.	46,395	62,773

FRANCE—TAKEN FROM MR. MACGREGOR'S TARIFF, PRINTED FOR PARLIAMENT.

	1833.	1840.
Exports of woollen manufactured goods	36,633,000f.	61,634,000f.
Of which the following amounts were exported to markets considered almost exclusively English:—		
United States of America	6,207,000f.	12,634,000f.
Spain	5,239,000f.	7,675,000f.
Tuscany & Roman States	506,000f.	1,192,000f.
Russia	171,000f.	422,000f.
Chili	231,000f.	2,384,000f.
Buenos Ayres	169,000f.	720,000f.
Brazil	378,000f.	642,000f.
Mexico	279,000f.	493,000f.

EFFECT OF TAX ON FOREIGN WOOL ON THE PRICES OF BRITISH WOOL, THE TAX OF SIXPENCE PER POUND IMPOSED IN 1819, AND REDUCED TO ONE PENNY PER

Pound in 1824, taken from Evidence given before the House of Lords in 1828.

PAGE IN REPORT OF THE HOUSE OF LORDS.	page 277. Mr. Nottidge, wool dealer, Bermondsey.		388 Mr. Cook, Manufacturer and Merchant, Dewsbury.			11 Mr. Ellman, Farmer, Sussex.	36 Mr. Healey, Farmer, Lincoln.	382 Mr. Fison, Wool-dealer, Norfolk.	102 Mr. Legg, Wool-dealer, Bermondsey.	
	Southdown, per lb. s. d.	Kent, per lb. s. d.	Laid Highland, 24 lb. s. d.	White Highland, 24 lb. s. d.	Cheviot, 24lb. s. d.	Southdown, per lb. s. d.	Leicester, per lb. s. d.	Clothing Wool, per lb. s. d.	Southdown, per lb. s. d.	Kent, long, per lb. s. d.
1818. Spring .	2 0	2 0	20 0	24 0	28 6	2 0	2 0¼	2 6	2 6	2 0
Autumn.	2 4		20 0	26 0	33 0					
1819. Spring .	2 0	1 3	12 0	14 0	24 0	1 6	1 6	1 6	1 7	1 3
Autumn.	1 5		11 6	15 6	25 0					
1820. Spring .	1 5	1 4	10 6	12 6	21 0	1 6	1 2½	1 2¼	1 5	1 4
Autumn.	1 4		10 0	13 9	22 0					
1821. Spring .	1 2½	1 1	9 6	13 6	19 0	6	1 0½	1 0½	1 3	1 1
Autumn.	1 2		7 6	11 0	18 0					
1822. Spring .	1 1	0 11	7 6	10 0	18 0	1 6	1 0	1 0	1 3	0 11
Autumn.	1 3		6 0	8 0	14 0					
1823. Spring .	1 2¼	1 0	6 0	8 6	13 6	1 6	1 0	1 0	1 3½	1 0
Autumn.	1 3		5 6	8 0	12 6					
1824. Spring .	1 0	1 1	6 6	8 6	12 6	1 6	1 1	1 1	1 2	1 1
Autumn.	1 2		7 0	9 0	12 6					
1825. Spring .	1 4	1 4	12 0	15 0	..	1 0	1 1	1 1	1 4	1 4
Autumn.			10 0	14 0	20 0					

Prices of Foreign low Wool at Liverpool.

Zegal	9½d. to 11d. per lb.
Buenos Ayres.	5d. to 8½d. per lb., washed.
Ditto	2¾d. to 4d. per lb., unwashed.
Peruvian	6d. to 6¼d. per lb., unwashed.
Ditto	8½d. to 12d. per lb., washed.

Foreign Wools exported from Jan. 1 to May 5, 1842.

Ostend....785 bales, chiefly Zegai, Buenos Ayres, and a few Peruvian.

Antwerp....2,213 bales, chiefly Peruvian.

Havre	62 do.	do.
Ghent	270 do.	do.
Boston, U. S.,	1,504 do.	do.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a Council held on Wednesday, the 18th of May, present, the Duke of Richmond, K.G., in the chair, Marquis of Downshire; Earl Spencer; Lord Portman; Lord Bridport; David Barclay, Esq., M.P.; Thomas Raymond Barker, Esq.; John Raymond Barker, Esq.; F. Burke, Esq.; Colonel Challoner; James Dean, Esq.; H. Gibbs, Esq.; C. Hillyard, Esq.; Sir John V. B. Johnstone, Bart., M.P.; E. W. W. Pendarves, Esq., M.P.; Rev. W. L. Rham; W. Shaw, Esq.; R. A. Slaney, Esq.; Rev. J. R. Smythies; and Colonel Wood, M.P.

The Report of the House Committee and Mr. Dean's draught of Specifications were read and adopted.

Mr. Manning's Report on the progress of the Bristol Works was received and referred to the general Bristol Committee.

Professor Sewell expressed his willingness to undertake an investigation into the question of the supposed effects of the large White Belgian Carrot in producing blindness in horses; and at his request, the names of the parties whose horses had suffered from excessive feeding with this carrot, were ordered to be supplied to Professor Sewell, as means for the prosecution of his inquiries into the circumstances in each case.

On the motion of the Duke of Richmond, seconded by Earl Spencer, Professor Liebig, and Mr. Henry Colman, were unanimously elected Honorary Members of the Society.

Mr. Raymond Barker brought forward the motion of which he had given notice, recommending the Marquis of Downshire to be put in nomination at the ensuing Anniversary Meeting, as the next year's President of the Society.

Lord Spencer having seconded this motion, and expressed the satisfaction he felt in supporting Mr. Barker's proposition, the Marquis of Downshire, in returning thanks for the honour the Council had done him in entertaining this suggestion, explained to the Meeting the circumstances connected with his numerous engagements in reference to his estates in Ireland, which would entirely preclude his undertaking the important office of the President of the Society for next year; but he trusted that many opportunities would occur of leisure to enable him to attend at intervals at that Board, and evince his sincere and strong attachment to the Royal Agricultural Society of England, and his sense of their kindness at that time evinced towards him by the Council. The Council then proceeded to draw out a list of the Members of the Society to be recommended to the Anniversary Meeting for election as Members of Council, to supply the place of those who went out by rotation.

List of Members.

The Council resolved, That a complete List of the Members of the Society to Dec. 31, 1842, should be printed in the first part of the Journal published in the year 1843.

Storing of Turnips.

Colonel Wood, M.P., presented to the Council samples of Swedish Turnips which had been completely preserved during the winter, and gave to the Members present the following account of the method which had been adopted:—

These turnips were grown from seed obtained from Messrs. Thomas Gibbs and Co., and were taken out of the ground on the 11th of December last, when they were trimmed and put in heaps between four wattle hurdles lined with a little barley-straw, and the tops of the heaps were thatched with straw. The heaps were opened on the 1st of April last, when there was not a bad turnip to be found amongst them. These four wattle hurdles were set up in the open field where the turnips were grown, and the turnips were piled within them until they rose to the form of the slanted roof of a house; the thatch was then put on sufficiently thick to keep out the rain; and Colonel Wood supposed that the turnips were kept sound by a certain quantity of circulating air through the hurdles, which would not have occurred had the turnips been earthed. Colonel Wood considered the plan he had thus adopted a very successful one in its result, and only feared that the time, labour, and expense consequently attending it might prove a drawback to its advantages.

Mr. Hillyard communicated to the Council the following results of his own experience on this subject:—

For sheep the turnips should be got up, topped and trimmed, before winter sets in; thrown clean and dry together into pits about five feet wide and about two deep; piled up and formed into ridges, and covered over first with hulm and afterwards with the mould; thus made secure against severe frost, for turnips which have been frozen, although the frost in time will go out of them, never become of the same previous good quality. They are of course cut and consumed near the heaps. Those parts of the field should be chosen for storing which are the thinnest of soil, but not in sheltered situations, for such parts are sure to be sufficiently manured by the sheep. Turnips thus secured are as good in Feburary or March as they were in December.

Mr. Hodgetts Foley presented to the Society the Reports of the Stewponey Agricultural Society and the Becher Club, with a coloured map of the country 12 miles round Stewponey.

Mr. Wilbraham presented a work by Mr. Whitley on the inutility and mischief of the practice of cheese-colouring, and advice on its disuse in the Dairy.

Mr. Chandos Pole presented specimens of butter from Derbyshire, worked up by means of the wooden pats instead of the dairymaid's hands.

Mr. Potter, (agricultural and analytical chemist) of Upper Fore-street, near Vauxhall Bridge, presented a sample of his new "Artificial Guano," with a copy of his work, giving an account of this compound as a cheap and efficient substitute for foreign Guano.

Mr. Loudon presented the First additional Supplement to his Encyclopædia of Cottage, Farm, and Villa Architecture and Furniture, bringing down the improvements in these arts to the present time, and illustrating the subject with three hundred engraved designs.

The Council then adjourned to Saturday, the 21st of May.

At a Council, held on Saturday, the 21st of May, present—the Duke of Richmond, K. G., in the chair, Earl Spencer, Henry Blanshard, Esq., T. W. Bramston, Esq., M.P., James Dean, Esq., H. Gibbs, Esq., C. Hillyard, Esq., Sir John V. B. Johnstone, Bart., M.P., W. Shaw, Esq., and Rev. J. R. Smythies:—

The Duke of Richmond proposed, and Earl Spencer seconded, the recommendation of the Earl of Hardwicke to the Anniversary Meeting, for election as the President for the ensuing year, to come into office immediately after the Meeting at Bristol. This resolution was unanimously agreed to by the Council.

The Council then finally agreed to their report to the Anniversary Meeting, and adjourned to Monday.

At a Meeting of the Council held on Monday, the 23rd of May, present, the Duke of Richmond, K. G., in the chair, Earl Spencer, Henry Blanshard, Esq., Henry Boys, Esq., T. W. Bramston, Esq., M.P., James Dean, Esq., H. Gibbs, Esq., C. Hillyard, Esq., W. F. Hobbs, Esq., Sir John V. B. Johnstone, Bart., M.P., G. Kimberley, Esq., W. Shaw, Esq., Rev. J. R. Smythies, and W. B. Wingate, Esq.

Charles Robert Colvile, Esq., M.P. for South Derbyshire, was unanimously appointed Chairman of the Local Committee of the Annual Country Meeting, to be held at Derby, in 1843, for the North-Eastern District of England and Wales.

The Council then adjourned to Wednesday, the 1st of June.

ANNIVERSARY MEETING.

Monday, May 23.

Present:—Henry Handley, Esq., President, in the Chair; Duke of Richmond, Marquis of Downshire, Earl Spencer, Earl of March, Earl of Ducie, Earl of Rosebery, Lord Portman, Lord Worsley, Lord Camoys, Honourable Captain Spencer, Honourable H. C. Agar, H. Boys, S. Druce, Rev. J. Collin, F. Wells, H. Gibbs, Rev. J. R. Smythies, John Hudson, W. F. Hobbs, W. B. Wingate, W. Shaw, G. Kimberley, Jas. Phillipps, R. Hodgkinson, C. Hillyard, H. Blanshard, T. W. Bramston, M.P., John Morton, J. Marmont, S. Solly, N. Blake, C. Hampden Turner, Colonel Challoner, B. T. B. Gibbs, H. Strafford, Montague Bere, S. Jonas, Jonas Webb, J. Kinder, T. Fyfe, M. H. Shuttleworth, T. Raymond Barker, J. French Burke, J. Forbes, J. Dean, J. W. Childers, M.P., H. Price, Rev. T. S. Turnbull, Capel Cure, Charles Tawney (Mayor of Oxford), Sir Charles Morgan, Bart., Sir Hungerford Hoskyns, Bart., W. R. C. Stansfield, M.P., J. Walters, W. H. Hyett, Spencer Stanhope, E. Lewis, General Sir Willoughby Rooke, C. Alderman, J. Rodwell, John Ellman, J. Burgess, T. Knight, S. Grantham, Sir Charles Lemon, Bart., M.P., Capt. O. Vernon Harcourt, Sir R. P. Jodrell, Bart., Rev. W. L. Rham, T. Severne, Colonel Scudamore, T. H. S. Sotheron, M.P., A. W. Wood, W. P. Gaskell, F. Pym, G. Wilbraham, E. W. W. Pendarves, M.P., B. Wroughton, S. Tremeheere, J. Swinburn, D. Martin, W. Marden, jun., H. Machin, V. Stuckey, Colonel Hall, John Neeld, M.P., John Hercy, F. C. Cherry, F. R. Thresher, W. W. Farr, C. J. Smart, W. Woods Page, Sir John V. B. Johnstone, Bart., M.P., and J. W. Bury.

Election of Council.

The President announced to the Meeting the change which had taken place in the mode of conducting the elections on that occasion, for the purpose of enabling the Members to exercise a more distinct freedom of election in the appointment of the Council; and having received from each member his signed Election List, proceeded to nominate Earl Spencer, Mr. Morton, and Mr. Wingate, the Scrutineers to examine and report to the Meeting in writing the result of the Election. The Scrutineers then retired, and during their absence the Meeting proceeded with the election of the President, Trustees, and Vice-Presidents.

The Duke of Richmond then rose to move that the Earl of Hardwicke be elected President for the ensuing year, and to preside at the great Country Meeting to be held in 1843 at the town of Derby, in the North-Eastern District, comprising the counties of Derby, Leicester, Nottingham, Lincoln, Rutland, and North Northampton. The noble Duke dwelt on the importance and the honourable character of the office, and of the peculiar qualities of business-like habits and practice in addressing large assemblages of individuals possessed by the noble Earl, whose services the Society had already been favoured with at the Cambridge Meeting, where so large a share of the success on that occasion was owing to the admirable arrangements of the Local Committee, of which the noble Earl was the Chairman, and whom the Duke of Richmond concluded by eulogizing as a true lover of agriculture, a liberal and considerate landlord, an honest and upright man; and one who would preside to the great advantage of the Society, not only over its Monthly Councils in London, but at the great Meeting of its Members in the country.

Mr. Jonas immediately rose to second the motion, and he was aware that he was selected to perform that pleasing duty simply on the grounds of his being a practical farmer, and as one, who residing in Cambridgeshire and in the immediate neighbourhood of Wimpole, had so competent a knowledge of the high estimation in which the Earl of Hardwicke was held by the farmers of Cambridgeshire, and by all who had the honour of his acquaintance or connexion; he was sure the Society could not have selected any one better qualified for the Presidency; and it gave him the greatest possible pleasure to second the noble Duke's motion. The President then put the question from the chair, and the Earl of Hardwicke was unanimously elected President of the Society, to enter on the duties of his office, agreeably with the terms of the charter, on the rising of the Meeting at Bristol.

On the motion of the Earl of Rosebery, seconded by the Marquis of Downshire, the Dukes of Richmond, Grafton, Rutland, and Sutherland, the Marquis of Downshire, Earl Spencer, Hon. R. H. Clive, M.P., Right Hon. Sir James Graham, M.P., Sir Francis Lawley, Bart., Sir Thomas D. Acland, Bart., M.P., Mr. Handley and Mr. Joseph Neeld, M.P., were re-elected Trustees of the Society.

On the motion of the Marquis of Downshire, seconded by Earl Spencer, the Dukes of Wellington, Buckingham, and Northumberland, the Marquis of Exeter, Earls of Chichester, Ducie, Talbot, and Fitzwilliam, Lords Worsley and Portman, and Sirs Thomas Gooch and Charles Morgan, Barts., were re-elected the Vice-Presidents of the Society.

Earl Spencer then reported the result of the scrutiny of the Election lists, and took that opportunity of stating to the Meeting, that the present mode of electing the 25 members of Council, who were to replace the same number who went out annually by rotation, was giving the Members no new privilege whatever, for by the terms of the Charter they had from the commencement had the undoubted right to the utmost freedom of election granted to them at that meeting; but the present arrangement was intended to simplify the election, and to give the Members the opportunity of objecting to any single individual in the list proposed to them, who might fail in their opinion in the requisites for such an office, without being obliged, as formerly, to object to the whole as proposed for their adoption, without having the power of such individual exception. Any Member might now, on signing his name to the list, propose any other name or names as a substitute for any standing in the list recommended by the Council. In the present election, the noble Earl had the satisfaction to report there was not a single cross-list; and he thought the Society were quite right in putting the confidence they had thus done in their Council. With regard to the finances, he was glad to observe that they were in a very good state; but not, however, in a condition to justify any squandering of their funds. The Society at the end of its fourth year was in a most satisfactory state; much good had been done, and much more was doing, and he had no doubt it would continue to prosper.

The President then read the following report of the election delivered in by the Scrutineers:—

Members of Council re-elected.—Mr. Barclay, M.P., Mr. Raymond Barker, Mr. Burke, Mr. Blanshard, Mr. Ellman, Mr. Grantham, Mr. Webb Hall, Mr. Hayter, M.P., Mr. Hillyard, Mr. Hobbs, Mr. Jonas, Mr. Kimberley, Mr. Kinder, Sir Charles Lemon, Bart., M.P., Mr. Page, Mr. Shaw, and Mr. Thompson.

New Members of Council.—Hon. G. H. Cavendish, M.P., Sir Hungerford Hoskyns, Bart., Mr. Chandos Pole, Professor Sewell, Hon. Captain Spencer, Mr. Charles Stokes, Mr. George Wilbraham, and Colonel Thomas Wood, M.P.

The President then handed the balloting papers to Lord Spencer, with a request that the scrutineers would immediately destroy them agreeably with the condition of the Bye-law. He then proceeded to request the Secretary to read the Report of the Council.

Mr. Hudson, the Secretary of the Society, then read the Report of the Council to the Anniversary Meeting.

Lord Portman, on rising to move the adoption of the Report, rejoiced in common with the whole country at so admirable a progress already made by the Society at so early a date of its useful career; and it was truly gratifying to find every class of individuals—Corporations of Cities, Departments of the Government under every administration, foreigners of distinction, and private persons of every kind—all uniting to aid the Society in its national object to improve the culture of the land of this country. On one point, however, he felt great concern, and that was the apathy evinced by so many of the members in allowing their subscriptions to get into arrear. He had, as a Member of the Council, heard many reports read, and from all he found in making inquiries among such of his acquaintance as were in arrear, this apathy arose from no indifference to the cause or interests of the Society, but from the want of a little stirring up of their remembrance on this topic; which he hoped would be enforced.

The Earl of Ducie seconded the adoption of the Report, and remarked, that if anything were required to show the assiduous attention of the Council to their duties, and the interests of the Members, that Report would show that they had not been idle. He thought them most wise in not building an establishment on a large scale, and it gave him sincere pleasure to find that they had not neglected the labouring interests in publishing cheap tracts (at a mere nominal price) for wide distribution among the labouring poor on the management of their gardens, and the economy and comfort of their households. He was also glad to hear of the extraneous assistance afforded by the Government, and especially of the systematic analysis of the soils of the kingdom to be undertaken by the Woods and Forests.

The Report was then unanimously adopted.

Colonel Challoner, as Chairman of the Finance Committee, read to the meeting the various Balance Sheets of the Accounts; and referred, as he proceeded, to the several folios of the ledger which lay on the table, and contained in detail under classed heads the whole entry of accounts of which the balance sheets were the summary. There was only one item, he observed, that was a drawback on the general satisfaction he felt in reporting that schedule of the finances to the meeting, and that was the sum of 940*l.* charged against the funds of the Society as the excess of Expenditure at the Liverpool Meeting over the Receipts on that occasion. The great consolation, however, he felt was, that a similar item would never again appear in their accounts; and in reference to the Meeting to be held this year at Bristol, he had the greatest confidence that through the careful attention and anxiety evinced by the Duke of Richmond, in his capacity of Chairman of the General Bristol Committee, the Bristol accounts would present a very different aspect. As a general observation, Colonel Challoner remarked, that the Society had plenty of money to go on with, if only due economy be maintained in the expenditure; and he had no doubt that, while the Council were liberal but economical with the means at their disposal, and husbanded their resources with prudent foresight, the Society would go on better every year. He then explained the anxiety felt by the Finance Committee to fund the whole of the sums received as compositions for life of Governors and Members, and which had now been accomplished within 600*l.*, regarding the investment as permanently established, and not terminable by any annual rate of deduction from the capital; and also on the subject of the arrears, of which a large amount was outstanding and unpaid by Members, from misconception as to the terms on which the subscriptions are payable in advance on each New-year's day, and from the want felt by the Committee of the proper addresses of the parties in arrear. Two letters had already been sent to the Members in arrear, and the President was himself busily engaged in writing a final letter of persuasion to the Members whose arrears were unpaid.

The Earl of Rosebery observed that, as the money shown on the balance-sheet as an investment was not an expenditure to be deducted, but a part of the wealth of the Society—this view of the subject gave a still more flourishing aspect to the financial concerns of the Society.

Colonel Challoner having read to the Meeting the various dates and amount of the whole of the investments of money in the purchase of Stock, and Mr. Raymond Barker and the Marquis of Downshire explained the circumstances of these items—Earl Spencer stated his opinion that he did not think that large sums ought to be invested, the Society being (as Lord Downshire had stated) a distributing society; but, at the same time, he considered it as essential to its permanent welfare that there should be a considerable sum (perhaps not less than 10,000*l.*) invested in the funds, &c., in order to meet casual difficulties, and any change which circumstances might at any time occasion in the amount of annual subscriptions. It was the original rule of the Society, that all life-compositions should be invested, and he was satisfied with the amount of funded property as far as they had gone; but the Society ought to have in reserve such funds eventually as they could at any time fall back upon—in fact, that they ought to have more funded property than they had at that time.

Mr. Charles Hampden Turner, as one of the Auditors of the Society, confirmed all that Colonel Challoner had stated in reference to the accounts, and having carefully examined at the Audit held a few days previously the whole of the details, he felt it to be his duty to report to the Members that, conversant as he had been during his life with the details of commercial transactions in the City of London, he had never seen accounts better kept than they were within those walls in which they were then met; nothing could exceed their regularity and distinctness, nor the instant and satisfactory explanation of every item of their entry.

Mr. Thomas Flight expressed himself surprised, and almost indignant, at what he had heard of the great amount of arrears still outstanding; and he recommended that a list of all these defaulters should be printed, and sent to every Member of the Society, in order that the obloquy might not rest, as it now did, vaguely on the credit of the whole of the Members, but might be publicly and distinctly brought home to the parties in fault.

The Rev. J. R. Smythies submitted the proposed measure of furnishing each Member of the Council with a county list of defaulters within his district, in order that personal application might be thus made to each party.

The Duke of Richmond then rose and said, "Gentlemen,—The reason why the Council have not proceeded to the extreme measure of publishing the names of those Members of the Society whose subscriptions happen at this time to remain, from various causes, unpaid, either at your office or into your bankers' hands, is this: they feel that this is yet a very young Society—that an imperfect registry has only yet been obtained of the proper addresses of many of your Members—that causes of many kinds, independently of any wish to withhold their subscriptions, may have occasioned their non-payment—business, ill-health, or their being prevented from attending their usual market town, may each and all have, in numerous instances, led to the omission, and perhaps subsequent forgetfulness of this requisite duty to the Society; and the Council have not, therefore, thought it right, for an omission of the payment of a sovereign or two, to show up a gentleman to his friends as a defaulter, and to post a man for not paying his subscription for the first year or two. I am never for proceeding to strong measures when milder ones will do, and I think it will be better at first to name the circumstance to the gentleman who proposed each Member, requesting his friendly mediation and individual interest, without, however, in any way regarding such proposer as responsible for the arrear; and I am certain that the greater part of these arrears will eventually be thus recovered."

Mr. Tawney (Mayor of Oxford), Mr. John Ellman, and Mr. Barker, each addressed the meeting on the importance attached to this question.

Mr. Childers, M.P., as a Member of the Finance Committee, fully concurred in what had been stated by Mr. Hampden Turner as an Auditor of the Society. He thought the proposed plan of a local collector for the London local district a very useful one. It was true they had 7000*l.* invested in the funds, but he was unwilling that gentlemen should go away with the idea that the Society's finances were so flourishing. Investment was not income, but capital; and the Society ought not to be in the case of the man who spent his stock in the funds instead of living on the interest. Mr. Childers regretted to find so many landowners of immense property pay their sovereign as a member's subscription instead of becoming Governors and paying their five pounds to sustain the means and usefulness of the Society. "Ours," said Mr. Childers, "is the cheapest Society ever formed: for one sovereign a member not only gains all the information and advantages of the Society, but he actually receives his 10 or 12 shillings a year back in journals; and I do trust that a larger accession will ere long take place in the number of our Governors, and that peers of the realm and the large landed proprietors will not be one pound subscribers and put back 10 or 12 shillings of their subscription into their pockets."

On the motion of the Marquis of Downshire, seconded by the Earl of Rosebery, the thanks of the meeting were unanimously given to Colonel Challoner and the other members of the Finance Committee, for the clear, open, and unreserved manner in which they had laid the whole details of the accounts before the meeting, and for the great devotedness they had evinced in their unremitting attention to the finances of the Society. Mr. Barker and Mr. Blanshard returned thanks. Mr. Hampden Turner, Mr. Thomas Knight, and Mr. Tawney, were unanimously chosen auditors of the accounts on the part of the Society for the ensuing year.

The Earl of Rosebery bore testimony, as a Vice-President of the Highland and Agricultural Society of Scotland, to the lively interest with which the proceedings of the Royal Agricultural Society of England were watched; and he hoped that the day was not far distant when, with a higher rate of subscription, the Highland Society would follow the example of England in circulating among its members the same admirable medium of communication as the Journal so well known to that meeting; and he could truly say that the Highland Society looked upon the Society of England with great favour as a model of improvement.

Sir Charles Lemon wished to make one remark, and that a very important one, on the analysis of soils, which it had been stated in the report he had heard read to the meeting, the Government had proposed to have made at the Museum of Economic Geology. Now he was perfectly certain that if this analysis of the soils of the kingdom was to extend no further than the analyses at present made at that office into the elements of soils, such an undertaking would prove perfectly futile as to great questions of fertility and sterility of soils to be settled by such an investigation. In the analyses there made, the alkalies were entirely overlooked, and a mere rough analysis given of the common earths of soils; an omission of the greatest consequence, as had been proved in his own case, from examinations of fertilized soils resting on the Cornish rocks; and he sincerely trusted that the Society would gain the consent of the Government for such an analysis to be effected as would prove satisfactory to the members, and of real value to the country.

Earl Spencer then moved, and Mr. Wroughton seconded a vote of thanks to the auditors of accounts for the great pains they had taken on the part of the Society in examining the accounts.

The Duke of Richmond moved that the thanks of the Society be presented to those gentlemen throughout the country who had so kindly received and distributed the Journals among their neighbours, for without them more mistakes in their transmission would have been made than had actually occurred.

Mr. Childers, M.P., seconded this motion, which was carried unanimously.

Mr. Henry Boys (of Dover) returned thanks as one of their honorary distributors, and was assured that the greatest reward the distributors could receive for their past services was the kind and handsome compliment then paid them at that meeting.

The Duke of Richmond, as Chairman of the General Bristol Committee, expressed the satisfaction it would give him to receive from any Member of the Society any suggestions whatever for the arrangements at Bristol, and he would take care that such communications should receive the most deliberate consideration. Everything connected with that meeting had been kept in steady advance, and every arrangement was in progress that it was considered would tend to promote the comfort and convenience of the members and the public on that occasion. He could not but attribute the large item alluded to by Colonel Challoner in the Liverpool Balance Sheet to the late period to which the arrangements had from circumstances been put off, and no choice or competition thus left the Society for making equal or advantageous contracts.

The Marquis of Downshire gave a general invitation to the members to accompany him and the Deputation from the Meeting at Bristol to join the great Meeting of the Royal Agricultural Society, to be held at Cork in the following week. It would give him great satisfaction to induce as many of the members as possible to visit the shores of Ireland on that occasion.

The Earl of March then rose and said, "Before this meeting breaks up, I am anxious to propose what I am sure will be received unanimously, a vote of thanks to your excellent President for his unwearied exertions in the cause of the Society."

Lord Camoys seconded the motion, which was carried unanimously.

The President returned his best acknowledgments to the meeting for their kind reception of that proposition, and at the conclusion of the meeting, he found but two drawbacks to their unanimous satisfaction, namely, the question of arrears and the item in the Liverpool Balance Sheet; but for the future the Duke of Richmond's devotion to their cause gave them the pleasing earnest of security from loss; while he hoped at the town of Derby the Society would find that high-spirited and handsome reception that would leave them liberally stored with funds.

The President then left the chair.

At a Monthly Council held in Hanover Square on Wednesday, the 1st of June, present, his Grace the Duke of Richmond, K. G., in the chair, Lord Portman, Lord Camoys, Hon. George H. Cavendish, M.P., Colonel Austen, David Barclay, Esq., M.P., T. Raymond Barker, Esq., French Burke, Esq., Colonel Challoner, E. D. Davenport, Esq., H. Gibbs, Esq., W. Fisher Hobbs, Esq., Samuel Jonas, Esq., George Kimberley, Esq., Sir Francis Lawley, Bart., William Miles, Esq., M.P., W. Woods Page, Esq., Philip Pusey, Esq., M.P., Rev. W. L. Rham, M.A., William Shaw, Esq., J. Villiers Shelley, Esq., R. A. Slaney, Esq., and Geo. Wilbraham, Esq.

FINANCES.

Colonel Challoner having presented, as chairman of the Finance Committee, the Monthly Report of the Committee held on that day, proceeded to bring before the Council the motion of which he had given due notice, respecting the engagement of a local collector to be employed by the committee, from time to time, to get in the subscriptions of members residing in London and its neighbourhood. This Report was confirmed by the Council, and the requisite authority granted for the proposed collector.

Mr. Raymond Barker laid before the Council a new form of Election Letter to be sent to new members, and which the Council approved.

MEETING AT BRISTOL.

The Duke of Richmond, as Chairman of the General Bristol Committee, reported the progress of the arrangements for the meeting, and on the motion of Mr. Barker, seconded by Colonel Austen, Mr. Wm. Miles, M.P., was unanimously appointed Vice-Chairman of the great Pavillion Dinner at Bristol on the principal day of the show.

The Duke of Richmond then presented the Report of the Bristol Local Committee, signed by Mr. Miles, chairman, which was received, and the recommendations it contained, of the addition of Mr. Phippen, the late Mayor of Bristol, and of Mr. Loudon Mac Adam, the Chairman of the Victoria Rooms' Committee, to the Local Committee; and of a plan of Bristol, prepared by favour of Mr. Marmont, showing the relative localities of the Show yard, Trial ground, and principal thoroughfares of the city, being lithographed or engraved as a wood cut, and sent round with the programme to each Member of the Society; unanimously adopted and confirmed.

The Earl of Ducie communicated his wish to render every service in his power in promoting the objects of the meeting, having removed his residence to a distance within 12 miles of Bristol in order to be able to effect his requisite local attendance when required.

The Council unanimously appointed Mr. Fisher Hobbs the third Steward of the trial of Implement ground, to act in concert with Mr. Shaw and Mr. Webb Hall, previously appointed.

The General Bristol Committee was authorized to make arrangements for the delivery of scientific lectures on agricultural subjects, on the Tuesday morning of the week of the meeting at Bristol, to the members of the Society, agreeably with recommendation of Mr. Miles, M.P., Chairman of the Local Committee.

Mr. Raymond Barker gave notice that he should move, at the Monthly Council on the 6th of July next, that the election of members be suspended from that day to the Monthly Council in August.

Sir Charles Morgan, Bart., V.P., signified his intention of offering two prizes at Bristol for the encouragement of the Glamorganshire breed of cattle, namely—

	£	s.
For the best pair of two year old Glamorgan heifers	£10	10
For the second best ditto	5	5

without any restriction as to the owner or breeder, or for feeding; regarding this breed as not inferior to many others either as dairy cattle or draught oxen, or for the purposes of feeding for the butcher; and as he had reason to believe there would be several competitors for these prizes, he hoped the proposition would be acceptable to the meeting.

The Council unanimously agreed that Sir Charles Morgan's offer should be accepted with their best thanks, and that the prizes should be awarded agreeably with the Rules and Regulations of the Meeting.

It was decided that, agreeably with the standing regulations, no certificate or entry of Stock or article of Exhibition at the Meeting at Bristol, would be received or admitted after the 14th of June.

MEETING AT DERBY.

The Duke of Richmond laid before the Council a letter from the Earl of Hardwicke, expressive of his thanks for the honour the Society had done him in electing him their President for the ensuing year, and to preside over the great meeting to be held at Derby in 1843.

The Council agreed that it would be desirable to appoint a general Derby Committee; and at an early date after the ensuing meeting at Bristol, to nominate a deputation to proceed to Derby to inspect and report upon the various sites liberally offered for their choice free of expense in that town for the purposes of the meeting.

Mr. Daniel of Burton-upon-Trent transmitted (at the request of Mr. Colvile, M.P.,) a list of the prizes given to the tenantry of the Marquis of Anglesey; and Mr. Bromley, Secretary of the South Derbyshire Agricultural Society, and Mr. Eames, Treasurer of the Ashby-de-la-Zouch Agricultural Association, the prize sheets and local regulations of their respective committees, with the offer of their best services in reference to the meeting to be held at Derby.

AGRICULTURAL LITERATURE AND SCIENCE.

John Barton, Esq., of East Leigh, near Emsworth, Hampshire, addressed a letter to the Duke of

Richmond on the advantages which would result from a digested collection of all that had been effected, from time to time, in the various departments of agricultural science and practice in this country as well as in foreign parts, so that any one in undertaking any experimental inquiry might at once ascertain, on reference to such a review of transactions, what had already been done by others in the same line of investigation. Mr. Barton adduced as an instance of want of this desideratum, and as an illustration of its value, the question of the comparative nutritive value of different kinds of food for cattle; in reference to which no less than seventeen different authorities had been quoted by the celebrated modern writer Boussingault in the *Annales de Chimie;* all of which, excepting three, were unknown even by name to Mr. Barton, nor could he, on applying to other parties, acquire any further reference to them or their writings; thus proving how little, with all our present activity, we know of what is going on in other parts of the world on questions of immediate interest to ourselves and others. Mr. Barton therefore suggested that these foreign journals should be taken in by the Society, and a review of the facts or references they contained be made available to the English reader and the members of the Society at large; and that a summary should also be made from English authors who have written with success on given subjects. On the subject of Farm-yard Manure, he observed that Arthur Young had received a gold medal from the Bath Society in 1804 for a memoir giving an account of the various experiments made by him on its management; and the celebrated Von Thaer had also, in his Principles of Agriculture, made reference to other experiments on the subject, to none of which Mr. Barton had yet been able to gain access; but as the Society had offered a prize for the best Essay on the Management of Farm-yard Manure, he with other competitors would of course deem it essential to the due performance of their task to consult those details. Mr. Barton concluded his letter by expressing his satisfaction at being informed of the intention of the Council to provide an Agricultural Library of reference for the use of the members.

The Duke of Richmond expressed his opinion of the importance and utility of such a précis or summary of information as suggested by Mr. Barton, and Mr. Pusey, M.P., his desire to see the Society in possession of a select but comprehensive Agricultural Library. Mr. Miles, M.P., stated, that he was authorized on the part of the Bath and West of England Agricultural Society to express their willingness to throw open in any way the Council might desire their unique and invaluable collection of the older works on agriculture; and Mr. Barton's communication was referred to the Journal Committee.

Mr. Pusey having informed the Council that Dr. Buckland had procured for the Society, through Mr. Ruffin, of Petersburg, Virginia, a set of a valuable American work, entitled "The Agricultural Register." The Council received this communication with thanks, and ordered a complete set of the Society's Journal to be transmitted to Mr. Ruffin, in acknowledgment of this donation.

Mr. Robert Rigg, F.R.S., addressed to the Council, from Whitehaven, in Cumberland, a communication on the conditions under which experiments in agricultural science should be made. Mr. Rigg in this paper observes—"Fully persuaded as I am that the reason why agriculture has not derived much benefit from chemical science is, that the experiments upon which the chemical philosopher has based his theories, have not been made in a manner sufficiently practical, that they have been imperfectly examined, that analogy has too frequently supplied the place of inductive evidence, and that the knowledge derived from practical experience has not been sufficiently recognised; and I am fully convinced that almost every farming operation will derive benefit from the evidence sought out of well-directed experiments when carefully examined in all their parts. I trust that no endeavour will be wanting on the part of the leading members of our very important Society to induce scientific and practical men to make experiments which have a reference to the discovery of principles applicable to agriculture; and that they will use their influence in impressing upon such experimentalists the necessity of attending strictly to what is taught only by each experiment, and not entangle the experiments with existing theories." Mr. Rigg concludes his communication with a recapitulation of the objects of researches in agricultural chemistry which have long engaged his attention, and from which he thinks he has clear evidence to prove that carbon (instead of being, as is commonly supposed, a simple element) is a vegetable product, made by plants, varying in quantity with the kind of land on which they grow; that the uncombined nitrogen in the atmosphere enters largely into the constitution of growing plants; and that it is difficult to conceive anything more at variance with the results of chemical experiments and practical agriculture than the theory which supposes plants to derive the principal supply of their carbon from the carbonic acid of the atmosphere, and of their nitrogen from ammonia.

Mr. Titus Smith, Secretary of the Central Board of Agriculture of Nova Scotia, addressed a letter to the Council, requesting information on the subject of the Alpaca or Andes Sheep, which, it has been suggested to that Society, were probably hardy enough for naturalization in that part of our colonies; but as Mr. Cuthbert Johnson had, in his "Farmer's Cyclopœdia" (while describing them as capable of resisting cold), stated that although introduced only 20 years, there were not more than a hundred head of these sheep in England. Mr. Smith, enquired on the part of the Board, whether their slow increase was owing to any effects of a cold climate in checking their propagation?

Mr. Smith observes, in reference to Daniel's manure, "Is the new Patent Manure composed of pulverized wood saturated with bituminous matter, united with soda and lime, of more value than the lime and soda used without the other articles? Soda is certainly a powerful manure, but too expensive. We have in Nova Scotia large tracts in which the soil contains so much iron-vitriol (that is green copperas—rust of iron united to oil of vitriol, chemically termed sulphuric acid) that lime in such quantities as are commonly used, has no sensible effect; but on such soils, oyster shells, coral-gravel, or old plaster, have a permanent good effect, owing probably to the quantity of carbonic acid gas which is disengaged from the calcareous or chalky substances by the action upon them of the vitriol or sulphuric acid which is constantly forming from the decaying pyrites, or sulphuret of iron in the subjacent rock. Wood-ashes, even after "leaching" by the soap-boilers, make a permanent and powerful manure; they contain here a large quantity of sulphate of potash. It is observable, that at a great distance from the sea, ashes are of less value, while gypsum, which has no effect near the sea, is on many crops very useful in inland situations. It may also be observed, that very high winds here sometimes throw showers of salt-water over the land, to the distance of twenty or five-and-twenty miles from the sea, the water being sometimes much salter than sea-water when it falls. As the line that marks the situation where gypsum commences to be useful, is near that which limits these salt showers, may it not be that the salt prevents the gypsum from operating?"

Mr. William Evans, of Toronto, in Canada, transmitted to the Society the fourth number of "The British American Cultivator."

Mr. Miles, M. P., presented a tabular view of Manures with an account of their properties and modes of application, drawn up, for the use of the agriculturists, by John Robinson, M. B., Lecturer on Agricultural Chemistry and Rural Economy. The author prefixes to his enumeration of manures, an introductory illustration of the two principles on which his theory is founded. The first principle is, that whatever proximate elements are found by analysis in any particular plant, must be again provided for in the manure which is applied to promote the growth of another individual of its species; and the second, that no substance can act as a manure which is either not applied in a liquid state, or capable of being dissolved by the plant before taken up by it into its pores. He concludes his details by some practical observations on manure by an experienced agriculturist.

Mr. Raymond Barker communicated some observations on the use and abuse of lime as a dressing for land, by Mr. Wm. Henry Fisher, of 18, Conduit Street, London. The author's great object is to impress upon farmers the importance of using quick lime, and not lime which once had been quick, but by delay in use and exposure to the atmosphere has become effete, and has absorbed from the air the carbonic acid which it again changes to the carbonate of lime it was before burning. He considers that many thousands of pounds are annually thrown away by agriculturists from want of a proper knowledge of this simple fact; and he recommends them to use their lime in the fresh burnt state, by carting it direct from the kiln upon their land, spreading it in the lump, and in that state ploughing it in directly, the sooner it being got from the kiln into the land the better. The author concludes his communications with the following remarks:—"The lime will be found, if properly burnt, on a second ploughing, to be crumbled to pieces or powder, and on harrowing will be intimately mixed with the soil. From the heat evolved during the slacking of the lime underground, and its causticity, which diffuses itself by the agency of the moisture it meets with through the soil, it will be found to destroy, or at any rate to be extremely obnoxious to wireworms, slugs, grubs, and other enemies which the farmer has to contend with, and which are very frequently the cause of failure in his crops, as well as in rendering most vegetable matter in the soil soluble, and food for future crops. These are the properties that *lime* has in contradistinction to *chalk;* the latter, no doubt, is a very useful addition to many soils, but do not go to the great expence of buying or burning lime, and then allow it to be converted again into chalk, or carbonate of lime, before you plough it into your land. In some districts the limestone is burnt in large lumps, particularly where wood is employed as a fuel—in which case it should be broken to about the size of a small penny roll before it is ploughed in. In some cases it may be said, that, owing to the distance of procuring lime, enough cannot be brought at one time for a ploughing; all I can say is, plough it in as soon as possible. If the turnip-fly is generated in the soil, lime, applied in the manner I have directed, would no doubt do much towards their extermination; and the same effect and result would hold good in respect to the black caterpillar. In conclusion, the good effects of applying lime in the manner recommended, I have myself experienced, and have received ample testimony to the like purport from extensive agriculturists, who at my suggestion have adopted the plan."

EARLY WINTER TARES.

Mr. Pusey, M.P., presented to the Council a bundle of early Vetches, grown at East Ilsley, in Berkshire, by Mr. Wm. Jones Williams, who gave the following account of their cultivation in a letter to Mr. Pusey:—"If you should imagine that these vetches, as the production of our cold unprotected country, are in any wise extraordinary, will you have the kindness to present them to the Society. They were planted on the 26th of last August, on a light red soil, on a patchy subsoil sometimes chalk or gravel, without the least shelter or protection, bordered by our Downs on one side, over which (as you well know) the winter wind blows cold. They followed an early crop of barley, which was after Swedish turnips manured with stable dung, and half the turnips carted off. Thus, you see, the condition of the land could not be extraordinary, and I attribute their early maturity to their peculiar hardiness, as well as to the forward planting and thick seeding; I having used 2 bushels of rye and 2½ bushels of vetches, per acre. The sheep I have kept on them for the last fortnight refused the rye (which is inconsiderable compared with the vetches), but the cart-horses were well satisfied with their nice appetites, as they fed well on what was remaining in the sheep-racks. I well know there is a spurious vetch introduced for this variety, which has caused a great deal of disappointment to those who used them. I will make no apology for addressing you, well knowing that your interest in agricultural matters will make it unnecessary."

Mr. Fisher Hobbs informed the Council that he was well acquainted with the valuable tares then submitted to their notice, which were raised by a practical farmer in his neighbourhood (Mark's Hall, Coggeshall, Essex), about five years ago, from a single plant, he having observed in a field of common winter-tares that this plant was earlier than any other in the field. Mr. Hobbs had grown these early winter tares, and had found them to be from ten days to a fortnight earlier than any other kind sown at the same time, though perhaps not quite so productive. Mr. Gibbs had grown them at Ampthill in Bedfordshire; they were considered as a selected variety of tares from Essex, but the farmer to whom the credit of discovering them was due resided near Sudbury, in Suffolk. The rye sown with them was found to be a great protection to them. Four bushels of seed per acre had been sown, but the quantity depended upon the nature of the land. Mr. Jonas stated that he had grown these tares, and found that a pecks to a bushel of rye seeds and 3 bushels of tares were found to answer, and that when they were required early they should be sown thick. Mr. Pusey and Mr. Miles both concurred in the value of this variety of winter tare, and the Duke of Richmond stated the immense advantage which the flock-masters of Sussex would derive from a spring food obtained a fortnight earlier than the common sorts upon their chalk-hills.

INDIAN PINE SEEDS.

Professor Royle presented, on the part of the East India Company, a supply of the seeds of the *Pinus Deodara*, or Himalayan Cedar, for distribution among members of the society, expressing at the same time his willingness to procure, if possible, a further supply, should such be required, and the members would favour him with their names and address in applying to him. Professor Royle describes this cedar as a valuable timber-tree, and well suited to the climate of the British Islands.

The Council ordered their best thanks for the favour of this communication.

MEETING OF THE COUNCIL.

The Duke of Richmond gave notice that he intended to bring a motion before the next Monthly Council for restricting the legislative power and official business of the Society to the monthly meetings of the Council, and reserving the weekly meetings for the election of members, and the reception and discussion of communications, taking into consideration the propriety of giving members in general the privilege of being present at such meeting and discussions of the Council.

VEGETABLE MANURE.

Mr. W. W. Cawston, of Worlington, near Mildenhall, in Suffolk, transmitted the following result of his experience in the ploughing in of green crops—"I am not aware that the attention of the agricultural world has been drawn to the following process, which I have had many opportunities of seeing tried with the most decided and beneficial effect in this neighbourhood. When trefoil has been seeded, clover or other layers failed, peas or tares grown, or a clean summer fallow made for wheat, in the middle of August, or thereabout, skeleton-plough, or plough very flat, and sow a peck of white mustard seed (sinapsis alba) per acre; harrow-in with light drags, clean off any grass or rubbish; and as soon as it is well up, top dress with a light coat of farm-yard dung (say 6 or 8 loads of 32 bushels). In 6 or 8 weeks a very heavy, fibrous, luxuriant crop will be ready to be ploughed-in for wheat as soon as the flowers are beginning to open. This operation may be easily accomplished when the plant has risen 3 or 4 feet high, by attaching a chain to the head and handle of the plough, which will completely draw it all into the furrow, and the following land buries it neatly. A large supply of vegetable manure is thus cheaply obtained, and the seed costs now about 2s. 6d. per peck ; while the mustard, if wanted, is excellent feed for ewes at tupping time. If any further directions should be deemed useful, I shall at all times be most happy to supply any information I may possess."

Mr. Staney gave to the Council an account of Alexander's long plough, for cutting out drains, laying down the soil by the side, and leaving trench prepared for the reception of the draining tiles ; and also of the new concrete draining-tile, manufactured by Mr. Smith, of Deanston, composed of sand, lime, &c., and not only cheaper, but at the same time much superior in quality to those at present in use. Mr. Rham believed this new tile was composed of five parts of sand and gravel (of different sized particles), and one part of quicklime.

The Duke of Richmond stated that by a remarkable coincidence this concrete tile—the rival of the famous Tweeddale tile, on account of its being only one quarter of the price—was the invention of a brother of the Marquis of Tweeddale. In Scotland, the Duke of Richmond had himself found great advantages in draining with peat-tiles, formed out of peat cut by means of a proper spade of a semi-cylindrical shape (in possession of the Society), out of the ground and dried. These portions of peat, thus cut out in the form of a draining-tile, on being exposed to the air, became changed into light porous masses of indurated heat insoluble in water, and through the interstices of whose spongy substance the drainage-water could freely percolate, while the cavities remained free and uninjured by the pressure of the surrounding earth. The Noble Duke stated that a large lake of his, having a peaty bottom, had been drained in this manner, the water and mud having been scooped out, and the peat exposed for three months to become dry and permanently pervious ; and at the end of five years it was found perfectly free from decay or obstruction. He mentioned this fact on the principle that the great object of farming was to get everything done in the cheapest and best manner.

Mr. Kimberley presented a specimen of a vegeto-mineral substance found in peat, varying in depth from 1 foot to 2½ feet from the surface ; lying in horizontal beds of an inch or two in thickness. The peat in which it occurs is almost entirely vegetable matter—principally resulting from the decay of timber and rushes ; both the peat and water are strongly impregnated with iron. When first taken the substance is of a white colour, but on exposure to the atmosphere it changes to a blue powder, and in appearance resembles the pigment known in commerce as *blue verditer*.

Mr. Wetherell, of Durham, obtained leave for Mr. Foster's painting of Mr. Booth's celebrated short-horned cow, which gained a prize at the Liverpool Meeting, to be left for the inspection of Members before being engraved for publication.

The Council then adjourned to Wednesday, the 8th of June.

At a Council held on Wednesday, the 8th of June, present, His Grace the Duke of Richmond, K.G., in the Chair, D. Barclay, Esq., M.P., T. Raymond Barker, Esq., J. Benett, Esq., M.P., T. W. Bramston, Esq., M.P., E. Buller, Esq., M.P., F. Burke, Esq., T. W. Childers, Esq., M.P., J. Dean, Esq., H. Gibbs, Esq., J. Kinder, Esq., Sir Francis Lawley, Bart., W. Miles, Esq., M.P., Sir Charles Morgan, Bart., E. S. Chandos Pole, Esq., P. Pusey, Esq., M.P., F. Pym, Esq., W. Shaw, Esq., R. A. Slaney, Esq., W. R. C. Stansfield, Esq., M.P., and Vincent Stuckey, Esq.

A letter was read by Mr. Pusey, from Mr. James Williams, relative to the cultivation of the vetch mentioned as cultivated by him at East Ilsley last year. Mr. Williams stated that the vetches were called "Racers;" they were planted on the 26th of August last ; two bushels of rye and two bushels and a half of vetches being sown per acre on land of a moderate description, light red in colour, subsoil in one part chalk, and the remainder gravel, not of sufficient strength to grow wheat ; the field lies unprotected on the north side of Ilsley Down. The feeding off commenced on the 5th of May—very good crop—the vetches, when reared up, being as high as the hurdles. There were no vetches like them in that part of the country.

Mr. Joseph Hall, of Fitzroy-street, Cambridge, submitted and explained a new convertible cultivator invented by him.

Mr. Weiss, of 7, Henrietta-street, Covent-Garden, presented specimens of a manure from Amsterdam.

Mr. Samuel Taylor, of Whittington, Stoke Ferry, submitted for inspection his new wire-netting, as a protection against hares and rabbits.

Mr. Chandos Pole presented copies of the Local Prize Lists of Derbyshire ; Sir John Tylden communicated the effect of ammoniacal liquor on vegetation ; Sir Peckham Micklethwait suggested the adoption of some contrivance similar to water-carts to water Swede turnip seed after its sowing in dry seasons ; and Mr. J. Barton, of Emsworth, expressed his willingness to submit to the Council an account of Boussingault's Theory of crops.

The Council will proceed on Wednesday, the 29th inst., to the nomination of Judges for the Show at Bristol, and to determine the prize-sheet for the meeting at Derby.

The Council adjourned to the 15th inst.

At a Council held on Wednesday, the 15th of June, present, William Miles, Esq., M.P., in the chair, Marquis of Downshire, Earl of Ilchester, John Raymond Barker, Esq., J. Benett, Esq., M.P., H. Blanshard, Esq., T. W. Bramston, Esq., M.P., French Burke, Esq., Colonel Challoner, T. W. Childers, Esq., M.P., E. D. Davenport, Esq., J. Dean, Esq., H. Gibbs, Esq., S. Grantham, Esq., G. Kimberley, Esq., Sir C. Lemon, Bart., M.P., Sir O. Mosley, Bart., E. W. W. Pendarves, Esq., M.P., E. S. Chandos Pole, Rev. R. Chandos Pole, Rev. W. L. Rham, Rev. W. B. Simpson, W. Shaw, Esq., T. H. S. B. Estcourt Sotheron, Esq., M.P., W. R. Crompton Stansfield, Esq., M.P., and V. Stuckey, Esq.

Colonel Challoner gave notice that he should move at the next Monthly Council, that the Secretary be directed to collect together all the Papers and Communications that have been presented to the Society, containing agricultural or other information, and file them in such order that they may hereafter be referred to in furtherance of the objects of the Society.

Mr. Shaw gave notice that he should move at the next Monthly Council that a Committee be appointed to consider, and report to what extent the proceedings of the meetings of the Council should be reported ; and what Papers read at the Meetings, but not intended for publication in the Journal, should be published weekly in the Agricultural Papers.

A report was read from Mr. Manning on the progress of the works at Bristol.

The Duke of Richmond transmitted, as presents to the Society, a hydraulic copying press, and Lucock's work on Wool ; Colonel Wright Vaughan, a copy of his work on the Agriculture of Sicily ; Mr. S. Taylor, copies of the first and second Annual Reports of the Stoke-Ferry Farmer's Club.

Communications were received from Mr. Grey, of Dilston, on the subject of the Lecture to be given at Bristol ; Mr. Lance, requesting a Lecture-room at the Meeting ; Mr. George Drake, on the standard points by which Judges decide on the merits of prize animals ; Hon. W. H. B. Nugent, on the improvement in the qualities and texture of stiff clay land, effected by his new subsoil plough ; and from Mr. Muskett on Liquid Manure.

Mr. Stott also transmitted a sample of his new soluble and highly concentrated saline ammoniacal manure, which Sir Charles Lemon, at the request of the Council, kindly undertook to get analyzed by Professor Solly, of the Horticultural Society, with a view to ascertain whether the manure contained all the elements essential to the due support of vegetable life.

Mr. Morton, of Boston, submitted and explained the model of his new Reaping Machine.

The Marquis of Downshire communicated Mr. Turnor's Report on Furrow Draining to the Rugely Farmer's Club; and Mr. Marmont transmitted, from Bristol, a form of agreement from the Committee of the Victoria Rooms, to be executed by the Council, in pledge that no damage would be done to that building during the Meeting at Bristol.

The Council adjourned to Wednesday next, the 22nd of June.

NEW MEMBERS.

The following gentlemen have been elected members of the Society during the month.

His Grace the Duke of Devonshire, K. G., the Earl of Hardwicke, Lord Kilmaine, of South-street, Park-lane, E. S. Chandos Pole, Esq., C. A. Knight, Esq., of Symond's Bath, Exmoor, Devonshire, and Frederick Clifford Cherry, Esq., Principal Veterinary Surgeon to the Army, were elected Governors of the Society.

Abbott, H., Long Ashton, Bristol
Addams, C., Holford, Bridgewater
Agnew, T., Exchange-street, Manchester
Allen, F., Ormond Villa, Bath
Anderson, F., Westbury, Bristol
Ashbury, J., Holme, Lang, Hereford
Bailey, Joseph, Eaton Court, Tenbury
Baines, J., Lisworney, Cowbridge, S.W.
Baker, William, High Street, Bristol
Barnadiston, Nathaniel, The Ryse, Sudbury, Suffolk
Barnard, F. T., Bristol
Barnard, G. T., Bristol
Barnes, F. K., Horsfield, Bristol
Baskerville, T. B. M., M.P., Clyro Court, Hay, Brecon
Batten, Robert, High Street, Bristol
Beck, Thomas, Tyny-Kwyn, Welchpool, N. W.
Beddoe, R., Bristol
Bell, John, Breaks Hall, Appleby.
Berryman, Wm. Chester, Wells, Somerset
Bernard, Rev. W., Clatworthy, Wiveliscombe
Biggs, A., Ashton Terrace, Bedminster
Blackburrow, T., Banwell Court, Weston-super-Mare
Blewitt, Ephraim, Ross, Herefordshire
Blissett, Charles, Clifton, Bristol
Bridgewater, D., Boat Side, Radnorshire
Brookman, Henry, Bromley, Middlesex
Brouncker, R., Boveridge, Cranbourne
Brown, W., Monckton-Farleigh, Bath
Burr, Daniel Higford, 4, Devonshire-place
Burrard, G. Walkampton, Lymington
Bush, G., Grove House, Westbury-upon-Trym, Bristol
Butt, J. S., Dodhill House, Kingston, Taunton
Can, J. S., Southill, Shepton Mallet
Caparn, W. J., Newark, Notts.
Cartwright, Thomas, the Hill, Bewdley
Castle, M. H., Stapleton Grove, Bristol
Cave, Sir John C. Browne, Bart., Stretton-in-the-Fields, Ashby-de-la-Zouch
Cave, Daniel, Cleeve Hill, Bristol
Cavendish, Codicote Lodge, Welwyn
Child, T. M., Begelly House, Tenby
Child, William, Wigmore Grange, Ludlow, Salop
Christmas, James, West Worldham, Hants
Coates, J., Clifton
Cobham, T., Morley Lodge, Devon
Cottam, Henry, Morton, Retford, Notts.
Coulson, T. L., Clifton, Bristol
Cozens, Robert, Milton Farm, Wells, Somerset
Clarke, J. B., Arno's Vale, Bristol
Culliford, William, Chewton-Mendip, Somerset
Curzon, Hon. and Rev. Alfred, Weston Underwood, Derby
Damer, Angel, Isle Brewers, Langport, Somerset
Dampier, H. L., Colinshays, Bruton
Davies, William Weaver, Cote Bank, Bristol
Davies, G., Pilwrwen, Brecon
Davis, H. T., Waterhouse, Bath
Davis, T. H., Clareston, Pembroke
Davy, James, Flitton-Barton, South-Molton, Devon
Day, A., L.L.D., Harford House, Bristol
Deere, J. R., Montague House, Lambridge, Bath
Dew, J., Bristol
Digby, Lieut. Colonel Robert, Knote Park, Almondsbury, Bristol
Ellison, John, Sandbeck, Rotherham, Yorkshire
Elliott, John, Kingsdown Parade, Bristol
Elton, R., Whitestanton, Taunton
Emery, J., York House, Bath
Ensor, H., Barton Farm, Sherborne
Fowler, Robert C., Gunton Hall, Lowestoft, Suffolk
Fowler, T., Clifton
Game, J., Pointington, Sherborne
Garrod, James, Wells, Somerset
Garth, T. C., Haines Hill, Reading
Garsed, J., Newland Valley, Monmouth
George, J., Cotham, Bristol
Gibson, William, Kirby Green, near Lincoln
Gibbs, A., Norton-Fitzwarren, Somerset
Gibbs, J., Bristol
Gingell, W. T., Somerset Street, Bristol
Gooding, R., Rexworthy, Bridgwater
Gordon, George, Torkington, Bristol
Granger, F., Bristol
Gregor, G. F., Trewarthewick, Truro
Greenway, H., Hambrook, Bristol
Griffith, Rev. C., Glyncelyn, Brecon
Gwynne, H., Bagland House, Neath, Glamorganshire
Gwynne, W. B., Pilroath, Carmarthen
Harper, John, Isham, Kettering, Northamptonshire
Harding, Egerton, Old Springs, Market Drayton
Harewood, Earl of, Harewood Place, Hanover Square, London
Hare, S. V., Bristol
Hassell, Charles, Bristol
Hautenville, W., Clifton, Bristol
Henckel, Count Hugo, Donnersmark, Siemianowitz, Königshütte, Prussia
Highmore, John Noake, Preston, Yeovil, Somerset
Hill, J. A., Almondsbury, Bristol
Hobhouse. H., 9, King's Bench Walk, Temple
Hodinott, J., Silberlake Farm, Sherborne
Holman, J., Glastonbury
Hornsby, R. Jun., Grantham
Howel, H., Driffield, Cirencester
Howells, H. W., Glasspont, Newcastle-Emlyn, S.W.
Hughes, W. Garnons, Glancothy, near Carmarthen
Hurt, Frances, Alderwasley, Derby
James, Samuel, Cotham Hill, Bristol
Jones, Philip, Chewton Keynsham, Bristol
Jones, W., Belle-Vue, Brecon
Kekewick, S. T., Peamore, near Exeter
Kelham, R. K., Bleasby, Notts
King, W. P., Brislington, Bristol
Knatchbull, Rev. W., Cholderton Lodge, Amesbury
Kent, J., Bristol
Lachlan, Mac B., Litfield Place, Clifton
Lamb, W., Auborn, Lincoln
Lamb, John, D.D. (Dean of Bristol), Corpus College, Cambridge
Lax, John, jun., East Horsington, Wells, Somerset
Lax, Robert, West Horsington, Wells, Somerset
Lewis, H., Green Meadow, Bristol
Long, Rev. Charles M., Rector of Whitchurch, Salop
Longbourne, John, Saundersfort, Tenby

Loveday, John, Williamscote, Banbury, Oxon
Lovell, John Teck, Duteate, Wells, Somerset
Lowe, Richard, Park Street, Bristol
Mac Dougall, L., 44, Parliament-street
Massel, T., Surgem, Pembroke
Mansell, Sir J., Bart., Haustephan Cottage, Carmarthen
Mateham, George, New-House, Downton, Salisbury
Mathews, S., Ifton Hill, Chepstow
Merry, W., Bristol
Miller, T., Castle Farm, Sherborne
Mills, J., Miserdine, Cirencester
Moggs, J. R., Stowey, Somersetshire
Morgan, C. M. R., Rapona Castle, Glamorganshire
Mortimer, Charles, Keynsham Manor Lodge, Bristol
Morton, J. D., Lower Wick, Worcester
Mullins, Charles, Chew-Magna, Somerset
Newman, Joshua, Bayford Hall, Hertford
Osborne, J., Bristol
Osborne, R., Bristol
Palmer, W., Pencoyd, Ross
Parry, A., Charlton, Bristol
Phillips, E., Monmouth
Philips, F., Downham Hall, Brandon, Suffolk
Plummer, William, Brislington, Bristol
Pearce, W., Kington, Langley, Chippenham
Peck, W., Bristol
Peters, D., College Green, Bristol
Peterson, J., Mangotsfield, Bristol
Poole, William Halstead, Tenick Hall, Whitchurch, Salop
Prickman, W. H., Uton-Barton, Crediton
Pring, J., Bishop's Hall, Somerset
Radford, John, Smalley, near Derby
Richards, Rev. E. T., Farlington, Havan
Rogers, George, College Green, Bristol
Rolls, Alexander, Gibraltar, Monmouth
Rowe, Wm. Wevill, Lamerton, Tavistock, Devon
Rudhall, Edward, Bristol
Sampey, Henry, Hawton, Newark, Notts.
Sampson, Edward, Henbury, Bristol
Sanders, G. E., Clifton
Sandford, Thomas H., Sandford Hall, Whitchurch, Salop
Savage, J., Henleys, Bristol
Savage, F. Jun., Henleys, Bristol
Savery, C., Bristol
Sheppard, H., Clifton Hill, Bristol
Short, Francis, Abbott's Leigh, Bristol
Stratton, Richard, Bristol
Stephens, Rev. M. F. T., Thornbury, Gloucestershire
Stokes, T., Hens Castle, Tenby
Symons, Thomas George, Mynde Park, Ross, Herefordshire
Talbot, Sir George, Bart , 21 Grosvenor Square ; and Mickleham, Surrey
Taswell, William, Torkington, Bristol
Tayler, Charles, High-street, Bristol
Taylor, Samuel, Hanbridge, Curry Rivell, Langport
Taylor, T. T., High Street, Bristol
Thomas, Rev. G., Llandaff Court, Cardiff
Thompson, J., Rathnally, Trim, Ireland
Turner, Wm. Henry, Fairfield House, Bow, Middlesex
Torrington, Viscount, Yokes Court, Mereworth, Kent
Vining, William, Clifton, Bristol
Vining, J., Bristol
Walter, R., Clifton
Watkins, E. B., Brounllis, Brecon
Watson, W. J., Great House, St. Nicholas, Cardiff
Wild, T. M., Brandbridges, East Peckham
Williams, Wm. Adams, Llangibby Castle, Usk, Monmouthshire
Williams, E., Aberyskir, Brecon
Willy, R. B., Hewelsfield Court, Chepstow
Willy, J. G., Dewston, Chepstow
Wood, T., Kingsdown, Bristol
Workman, W., Avon Cottage, Bedminster
Wyatt, Osmond Arthur, Troy House, near Monmouth
Yeatman, H. F., Marston House, Blandford
York, W., Highfield, Compton-Martin, Bristol

ON THE PRESENT STATE OF AGRICULTURAL MECHANICS,

AND ON THE IMPROVEMENT OF WHICH THE VARIOUS IMPLEMENTS NOW IN USE MAY BE SUSCEPTIBLE.

BY JOHN MORTON, JUN.

[Prize Essay.]

(From the Journalof the Royal Agricultural Society.)

It is one of the most satisfactory marks of the late revival of agriculture in England, that it has caused inquiries, not only into what formerly excited the greater interest, the breed and management of live stock, but also into every branch of arable farming. It is intended in the following essay on agricultural mechanics—one of the most important of these branches—to describe each implement in succession under separate heads, according to the order in which they are made use of in cultivation.

It is difficult to conceive what causes can have combined to produce the strange variety existing in the construction of implements. Differences in the practice of various districts, handed down from time immemorial, have probably been accompanied by differences in the form of the agricultural machines used. Differences in the soil also of various districts must have had some influence in causing this variety. It will be attempted in the sequel to show how far variations in the form of several implements are required by variations in the nature of the land they are required to work ; at present it is sufficient to observe that the immense variety now existing is certainly unnecessary, and only shows our want of acquaintance with the correct principles of their construction.

Implements may be divided into four classes, following the order of succession in which they are used on the farm :—

I. Implements used in tilling the land and in the cultivation of crops.

II. Implements used in harvesting the crops.

III. Implements used in preparing the crop for market.

IV. Implements used in preparing the crops for food for the stock on the farm.

I. The first class of implements, according to this division, are those employed in bringing the land into a fit state for the reception of the seed, and in keeping it in a proper state of cultivation during the growth of the plant ; and the first to be described under this head are the implements used in freeing land from superabundant water, the various descriptions of draining plough, and the subsoil plough, their valuable auxiliary. Then having by the use of these implements got our land into such a state that the other implements of tillage may be used with advantage, we shall come to speak of the plough, the harrow, the roller, and the various forms of the grubber or cultivator, with the valuable implements of drill-husbandry allied to them—the horse-hoe and the drill-harrow. Then we shall speak of the various forms of sowing-machines, whether for scattering the seed broadcast or sowing them in drills ; and lastly, as connected with every stage of cultivation, the cart and the waggon.

1. *Implements of Drainage.*

In tracing the history of thorough drainage we do not require to go very far back. The practice is, in fact, still in its infancy; certainly, however, no branch of agricultural practice has, in so short a time, effected such strikingly beneficial results as the frequent drain system.

Drainage was in former times restricted to directing the water of springs into proper channels, and hindering them from forming marshes. In this, great improvement was effected by Mr. Elkington, of Warwickshire, who did not merely apply himself to the confining and conveying away of the water after it had reached the surface, but, by means of boring-tools, probed the ground to the source of the spring, and took the water altogether out of its former course, directing into one channel what had formerly, by springs, overspread a considerable extent.

The removal of the water of springs, which used to stagnate on the soil, was a great good effected, but it was not generally known till Mr. Smith, of Deanston, pointed out the fact that, of the land injured by stagnant water, the great portion is wetted, not by water springing from the land, but by water falling and retained on the surface. The full acknowledgment of this fact will, of course, be followed by the application of the only remedy —that proposed by Mr. Smith—the frequent-drain system. This consists in cutting parallel drains at intervals varying from a half to one-eighth of a chain, and of proper depth, and in conveying the water from them to a proper outlet by means of a larger main drain, into which they all run.

In the great majority of cases land is such that, in the cutting of drains, the spade, and often the pickaxe, is required; and in all cases the most efficient drainage is that performed by the hand. The ditches, however, in those rare cases where the subsoil is clayey and free from stones, as in alluvial soils, may be cut by an implement which turns out the whole of it, or nearly all of it, at once. The first mention I have seen of such an implement, which, however, seems only to have been applied to the cutting of grips or surface-ditches, is in Mr. Douglas's report of Roxburgh and Selkirkshire, 1813, in which he speaks of "a kind of instrument or plough which cuts and removes a square foot of earth; and with six horses and five men will drain a greater extent in a day than 100 men." This, it seems, did not obtain general use: since, however, Mr. Smith gave such an impulse to the adoption of a system of thorough drainage, a plough for the purpose of cutting out a trench has been invented by Mr. Mac Ewen, of Black Dub, in the Carse of Stirling, where it is much employed. Though I have seen this implement, I never saw it at work; but it is said to answer admirably on the soft alluvial clay of the Carse, and testimonials have been received by the inventor, which show that by perseverance in its use it has answered well also on the more indurated and stony clays of the hilly land in the neighbourhood.

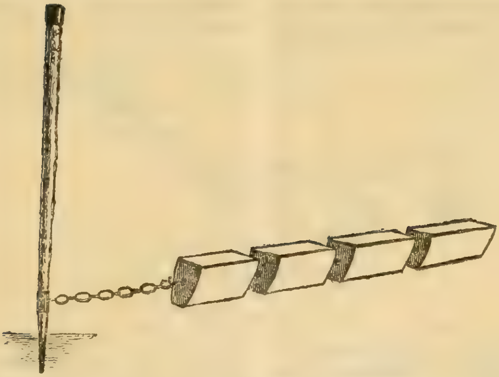
Great force is required to work this implement; ten or twelve horses, with a man to each pair, are required, besides two men to work the plough. The cost of this, with the tear and wear of the implement, is estimated at 3*l.* 12s. per day, viz., the horses at 4s. a day, the men at 2s., and the tear and wear of the plough at 1s. per horse. It will cut out 520 roods of 36 yards in a day, which gives 2d. per 36 yards as the cost; this is not one-twelfth part of the cost of digging with the spade. The trench thus formed is of great width; but as the same plough may be applied to replacing the furrow turned out, this does not signify. Before filling in the stones or placing the tiles, a man with a small spade forms a space for them, and corrects any deviations from the uniform fall of the bottom. This space of perhaps 4 or 6 inches in depth, added to 20 or 22 inches, the depth of the furrow turned out, makes the whole depth of the drain rather more than 2 feet. This is one of the most successful of the many attempts which have been made to diminish the expense of cutting drains.

The mole plough, the action of which consists in making a bore or tunnel through the soil at the depth of 18 or 20 inches, without removing the surface, is another of these attempts, but is by no means so good a one. It is only in those soils in which such a bore will stand, and not fill up, that this machine can be used, and then the mode of its action necessarily hardens and condenses the clay through which it passes, making it dense and impervious around the pipe which it leaves behind it.

The machine consists of a block of wood or piece of iron of a sugar-loaf form, attached by one or sometimes two narrow but strong uprights, about two feet long, to a strong framework of wood, to which the draught-chains are fixed. It is drawn either by a strong force of horses, or by a windlass and chain, which is moved from drain to drain as each is completed. The two uprights necessarily cut through the land above the drain, and so far connects it with the open air; but as they are narrow, the passage formed by them fills up, the sides collapsing as the machine passes.

A series of parallel drains is thus formed at a depth of 18 inches. These are connected with a master-drain, dug with the spade, into which the water from them runs and finds an outlet from the field: when this is filled in, the drainage is complete. Its permanency and efficiency of course depend on the nature of the soil and the subsoil it passes through. Under the most advantageous circumstances, however, it does not last long. This implement has been long in use; it is referred to in many of the county surveys of 1813. The use of the capstan also to draw it along, instead of employing a greater number of horses, was then frequent.

A better way of draining, however, is that called clay-draining. A trench 20 inches deep, 2 inches wide at bottom, and 10 inches wide at top, is cut with long narrow spades, which do not require the men using them to descend into the trench. After the trench has been dug a wooden mandril is made use of. It is formed of pieces of wood 6 inches deep, 2 inches wide at bottom, 4 inches wide at top, and from 9 to 12 inches long, hinged together so as to give the whole chain flexibility, and fits the bottom of the ditch to a height of 6 inches. The clay of the subsoil is placed above it, and being wetted is hammered down above it, and the rest of the soil is then thrown in. The mandril is then drawn along by means of a long pole pointed at one end, to which it is attached by a chain near the pointed end: this pole is made to act as a lever. (See figure.) On being drawn along, more earth is thrown in and hammered down above it, and so the work proceeds. This is more durable than the work performed by the mole-plough. It costs about 14d. per chain. Neither of these modes of draining, it is evident, admits of the action of the subsoil-plough above them: so far from that, they are very apt to be filled up by the treading of the horses in the or-



dinary cultivation of the land: they are, in fact, suited only for the drainage of pasture land.

The most efficient drainage, as I have said, is that performed by the hand, and in which broken stones or tiles are used; and when the subsoil plough is used after it, this will, there is no doubt, prove the most economical also.

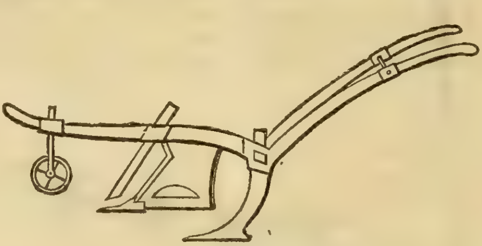
2. *Subsoil-plough.*

We now come to the consideration of the subsoil-plough. This implement, though only lately brought into prominent notice by Mr. Smith, of Deanston, seems to have been used in many districts of England long ago. Thus, in the Report of Lancashire, by Dickson, I find the following notice of the "miner or deep-stirring plough:"—"This is another tool of the plough kind, somewhat similar in its nature, which was introduced into the county nearly about the same period as the trench-plough ('long since,' see p. 157). It simply consists of a ploughshare firmly fixed to a strong beam by means of a strong sheath and handle, without any mould-board. It is usually drawn by four or more horses, being made to follow, in the furrow, the common plough, so as to penetrate into, loosen, and stir up the undersoil without turning it up, to the depth of from 8 to 12 inches below the tract in which that plough had gone."

A more accurate description of the way in which the implement is used than is contained in this paragraph of 1813 could not be given now. The use of it did not, however, spread, doubtless because it was unaccompanied by that which must always precede it—thorough drainage; and it was not till Mr. Smith showed, on his farm at Deanston, the immense advantages following the adoption of both operations together, that either obtained that high place in the practice of good farming which they now hold.

Mr. Smith's subsoil-plough consists of the ordinary framework of a plough, without the mould-board, made strong enough to stand the shocks and the strain to which an implement requiring the force of four or six horses to work it must be subjected. This framework is about 15 feet long. A sole-plate, on which a feather-shaped or pointed sock slips, is attached to it by means of two uprights and a curved coulter. The height of the plough, when held in a working position, from the sole-plate to the beam is about 22 inches. It is thus enabled to go to a depth of 20 inches. From the furrow side of the sock a spur projects, over which the mass of subsoil cut by the coulter and share is raised and broken, and falls down again. By the action of this spur, and of the whole implement, the subsoil is effectually stirred, without any of it being lifted to the surface. The effect of subsequent deep ploughing, after the action of the air has thus sufficiently meliorated the subsoil, will be beneficial, while without this previous cultivation it would have been injurious. The subsoil-plough requires at least four horses. The draught, in a rather clayey soil, was 11½ cwt., going from 16 to 18 inches deep. The draught of the common plough, which preceded it, and turned out the furrow in which it worked, was about 5 cwt.; so that the work for the horses was about the same in either case. It is found that the wider the furrow is turned out, the more efficient is the operation. In a subsoil ploughing-match, held at Stirling in 1840, it was found that the best work was done by that subsoil-plough which was preceded by the old Scotch plough, which casts a very wide furrow. It is evident that this does not necessarily imply that the subsoil-plough shall pass along a fewer number of furrows in a given width of land than where the furrow is narrower, for the width of the furrow depends not on that of the furrow-slice, but on the width of the plough, which thrusts the furrow-slice from the fast land. The expense of the operation of subsoil-ploughing is considerable. It varies from 24s. to 30s. per acre, according to the nature of the land; and it is evident that in rough strong land, where the pickaxe is afterwards required to remove the obstructions which the plough has met with, the expence will be much greater than this. This is a statement of the debit side of the farmer's account of subsoil ploughing. To find the credit side of the account, he must compare his land as it was—wet or scorched, according to the weather, on which it was wholly dependent,—with his land as it now is after the operation—free and friable, dry and open;—and the must take the crop he raises now at less expense, too, than formerly; for the land, being drier, is more easily tilled; and he must compare this crop with that he used to raise on the same land. The difference will pay a very great per centage on the capital he has laid out.

Several attempts have been made to diminish the expense of the operation of subsoil-ploughing. The first of them is by Mr. Pusey. A description of the Charlbury subsoil-plough is given in the 4th part of the 1st vol. of the Journal. It combines in one implement both the ploughs used in the operation of subsoiling. It not only stirs the subsoil, but opens the furrow in which the subsoil-plough works. It consists in the attachment of a strong tine, similar to those used in Biddel's scarifier, to the common plough, in a position in which it acts after the furrow-slice has been turned.



[The Charlbury Plough.]

This implement, doing all the work, requires, according to an experiment recorded there, less force to work it than the subsoil-plough, doing only one portion of the operation. It cannot, however, be so efficient in thoroughly stirring the subsoil as the original implement. The other attempt at diminishing the expense of subsoil ploughing is by Mr. Armstrong, of Stirlingshire, for which he received premiums from the Stirlingshire Agricultural Society and from the Highland Society. A description of it was given by Mr. Smith, of Deanston, at an agricultural meeting lately, which I transcribe. The inventor has adapted the principle of Mr. Wilkie's turn-wrest plough to Smith's subsoil-plough.

"The general frame-work is that of a subsoil-plough rather under the medium size, and to it is attached a hinged mould board, similar to the mould-board of Mr. Smith's hill-side or turn-wrest plough. By means of this arrangement the plough can be used for removing the furrow preceding the operation of the subsoil-plough, and, when the furrow has been removed, the mould-board being moved upon its hinges, from its working position, rests over the beam of the plough, whilst the instrument is used for subsoiling in the bottom of the furrow just removed. Thus the operation of removing the furrow and subsoiling can be alternately performed with the same implement, by the same ploughman and the same team of horses, by a simple movement of the mould-board, which is done in an instant by the hand of the ploughman at each turning. The additional weight of the mould-board serves to keep down the plough whilst subsoiling in difficult ground. The judges consider this implement well contrived, and as being an important boon to small farmers, and as certain to give great facility to the extension amongst them of the admirable system of subsoil-ploughing."

On the same principle, and similar in its mode of action to the subsoil-plough, is the Rackheath-plough, invented by Sir Edward Stracey.

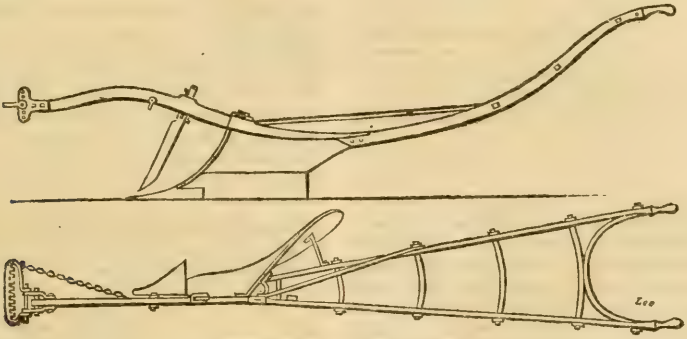
3. *The Plough.*

The plough has always been the most important of agricultural implements. Its origin is as ancient as the art of agriculture. In the earlier portion of one world's history it was very simple. Mankind, scattered few and far between, did not then require to make use of the poorer and more unprofitable descriptions of soil, and the rich lands they tilled yielded them ample return though but very slightly cultivated. This implement, accordingly, as then used, merely scratched the surface of the ground, or stirred it a few inches deep. Since then great alterations have been made in its form. The implement has been made not only to stir the soil, but to turn a sod. This probably took place when experience had taught that the poorer soils, which were at length brought into cultivation, could not be profitably tilled by a mere stirring of the surface. Even now the form of many of our ploughs shows plainly the origin from whence they sprung. The pointed stick, which was originally used, was, probably, gradually widened out into the form of a cone; and, to render its action efficient, the under part of this cone being cut away, we at once have the rounded breast and primitive appearance of many of our mould-boards. Unless we consider this to be the origin of this form of the mould-board, it is difficult to conceive how experience and practice would lead to the opinion, so manifestly inaccurate, that this is the best form, the one of easiest draught.

Of no implement is there a greater variety than of the plough. There are full-breasted ploughs, and hollow-breasted ploughs; there are wheel and swing ploughs; ploughs with fixed mould-boards, and turn-wrest ploughs; ploughs with two handles, and one-handled ploughs.

The writer of an excellent article "On Ploughs and Ploughing," in the "Farmer's Magazine" for January, 1841, divides all these into three classes—the Scotch swing-plough, the midland counties plough with one or two wheels, and the turn-wrest plough of some southern districts. The present Scotch plough is entirely different from the plough in general use thirty or forty years ago. There were, indeed, as great a variety in that country then as there are in England now. When, however, this form was introduced, it soon obtained almost universal adoption, and is now the only implement of the kind in use. It is curious that it should not have spread southwards as rapidly as it did northwards. Its use in England is confined to the border counties. The old Scotch plough was as clumsy as any of the clumsiest of the English swing-ploughs now used. It was not, however, the original of the present swing-plough. The original of Small's ploughs came from Holland or Flanders into Yorkshire, and was thence introduced into Scotland, where it acquired the name of the Rotherham plough. At this time Small, an ingenious mechanic of Berwickshire, became known to J. Renton, Esq., of Launceston in that county, who, perceiving his talents, erected the necessary buildings for an extensive plough factory, and placed him over it. Here Small devoted his energies to the improvement of the Rotherham plough; and the alterations he made on it soon deservedly gave it the name of Small's plough. Smalls plough soon drove all the cumbrous implements then made in Scotland out of it, and now it is in universal use. Slight alterations have been made in it, and every ploughwright of emi has his own form of the mould-board, but they differ but slightly, and Small's is the basis of them all.

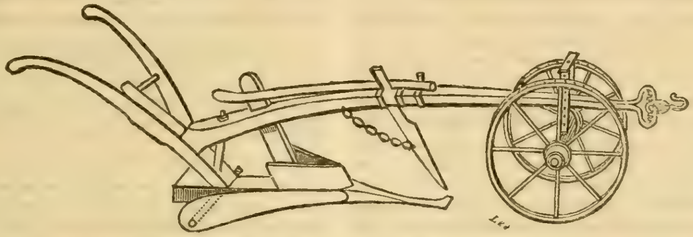
Wilkie, one of the best of these makers, obtained and continues to possess, a high degree of celibrity for the excellence of his implements. He has lately constructed a plough to which several different mould-boards are attachable, and this, it will be seen, is the only variety which is required in the form of the plough. The Scotch mould board is most gradual in the twist it gives to the furrow.



[Clarke's Plough. Scale 1-12,]

The annexed are two views of the Scotch plough of Clarke, a Stirlingshire ploughwright; they are drawn on a scale of $\frac{1}{12}$th. It is generally made wholly of iron. Small's first improvement was to substitute iron for wood in the construction of the plough.

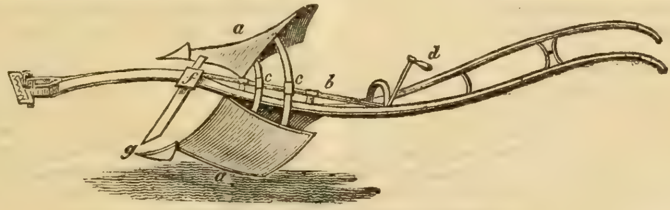
The immense variety of wheel-ploughs, as they are used in the midland counties, can better be illustrated by a series ot figures than by detailed description of each, which indeed I am not qualified to give.



[The Kentish Turn-wrest. See "Penny Cyclopædia."]

The Kentish turn-wrest plough, used for working the clayey and chalky soils of that county and several of the neighbouring counties, is the representation of the third class of plough. It is certainly a most clumsy implement, and its capability of breaking up the stiff lands of those districts is evidently due, not to any peculiar excellence of form, but to its great strength and weight, and the power applied to it. Its form is adapted, not for cutting a sod, but rather for tearing and forcing it from the land. The annexed figure represents it in its original and most general form, which has been much improved by Messrs. Ransome. The share is a broad chisel edge, and the coulter, by means of an elastic stick, which is made to press against one side or other of that part of it above the beam, is directed and kept on that side of it next the unploughed land. The plan of turn-wrest ploughing, turning all the sods one way and avoiding all furrows, is necessary on the steep hill-sides, and is much the best way of cultivating perfectly dry land.

Mr. Smith, of Deanston, now always uses the turn-wrest plough; and the regular and uniform appearance of the fields at Deanston is beautiful. The maker of this turn-wrest plough is Wilkie; the annexed is a drawing of it.



[Wilkie's Turn-wrest, or Hill-side Plough.]

Each of the two mould-boards is attached to the rod *b* by two bands of iron *c c*, by which, with the end of the handle *d*, they are alternately raised or depressed; while the one is in a working position, the other is carried above. The rod *b*, extending to the coulter at *f*, in moving the mould-board moves also the coulter one inch at the point, so as to give it the proper position with the point of the sock at *g*.

Having thus seen the immense variety that exists among ploughs, it may be well, before inquiring into what ought to be the form of the plough, to inquire what it is required to do.

The objects in ploughing are three; and the mode of ploughing must of course be varied to suit the object.

The furrow is opened up, and the furrow-slice is turned.

1. That the after-action of the harrow in covering the seed may be facilitated, and
2. That a new surface of mould may be exposed or ,
3. That anything laid on the surface may be buried.

Now, it is evident that these being the objects of ploughing, they cannot vary so much as to require that immense variety of implements which exists. The position in which the furrow-slice will lie does not depend on the plough, except in so far as its form and dimensions are regulated by that implement. When once the form of a series of slices which are to rest on one another is fixed on, then their position is also determined. The form of the furrow-slice then as it regulates its after position, must be regulated according to the work to be done.

First, then, with regard to the first object of ploughing, the preparation of the ground for the after-action of the harrow. It is demonstrable that when the angle of inclination of the furrow-slice is 45°, there is a greater quantity of earth raised above the level in the form of ribs than under any other circumstance. Now, as the action of the harrow will tear this lip or series of lips down, the more earth there is contained in them the greater will be the depth of loose mould thus formed. Now it is also demonstrable that this position of the furrow-slice can only be obtained when, the breadth of the furrow-slice being 10 inches, the depth is about 7. Here, then, we have at once the form and position of the sod, by the adoption of which we shall derive the greatest advantage from a subsequent harrowing.

The second object of ploughing being to expose a fresh surface of mould to the action of the air, it is evidently important to know under what circumstances the greatest amount of surface will be exposed. It will be at once seen from the subjoined solution of the question, that this is the case when, as before, the width being 10 inches, the depth of the sod is 7 inches. It will then lie at an angle of 45°, and the width of the portion on either side of it will be equal. This position, then, has the neatest appearance, while at the same time it answers two most important purposes of ploughing.

And now with respect to the third object of ploughing—it is obvious that in order to bury any thing effectually, the furrow-slice should as nearly as possible be turned upside down.

This will be the case when the breadth is great in proportion to the depth, and it will therefore be most perfectly answered when, the breadth being fixed on, the land is ploughed very shallow. Shallow ploughing too is what experience points out as proper when covering manure; and it is evident that, provided the manure have sufficient earth above it to absorb the products of its fermentation, its nearness to the surface, that its decomposition may rapidly take place, is an advantage.

Having now seen what a plough is required to do, we have to consider the form of the implement which shall best effect these objects; and as a consequence of what we have already said, we must first ascertain what form of plough will do the best work, and then see how this form may be altered to diminish the draught.

A plough consists of three parts:
1st. The frame-work;
2nd. The cutting parts;
3rd. The mould-board.

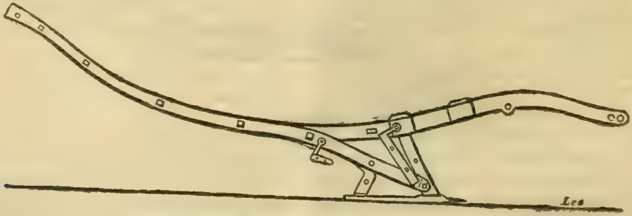
1. *The Frame-work.*

The frame-work of the plough must be regulated by the work to be done, so far as strength to sustain the tear and wear and the shocks of the roughest work is considered; but its dimensions, the length of the beam and the length of the stilts or handles, as they only affect or regulate the power which the man or the horse has over the implement, need not vary with the work to be performed. These are wholly independent of the consistence of the land to be ploughed, or of the form of the furrow-slice, which both vary, and their dimension may therefore be fixed; and amidst the immense variety of forms of the plough, it is satisfactory to know that this point, one so much affecting the appearance of the implement, need not vary.

The length of the beam in some degree affects the power of the horse over the implement. If it be long, it is evident that the straightness of the furrow will be less affected by any deviation of the horse from the straight path, and the motion of the implement will be more regular. This, however, is as well ensured by lengthening the draught-chain as by lengthening the beam.

The longer the handles of the plough, and the shorter the beam in proportion, the more power will the man have over his implement. There are, however, limits to both of these points, which convenience in the length of the implement impose. Very excellent dimensions are those of the Scotch ploughs of Clarke and Fergusson, plough-makers of Stirlingshire (see woodcut). The length of the beam is in these ploughs 3 feet, and that of the handles is 5½ feet; that of the whole plough is 10¼ feet, which leaves 21 inches for that part of the frame-work to which the body of the plough is attached.

The following is a sketch of the mere frame-work of their plough, on a scale of $\frac{1}{12}$th.

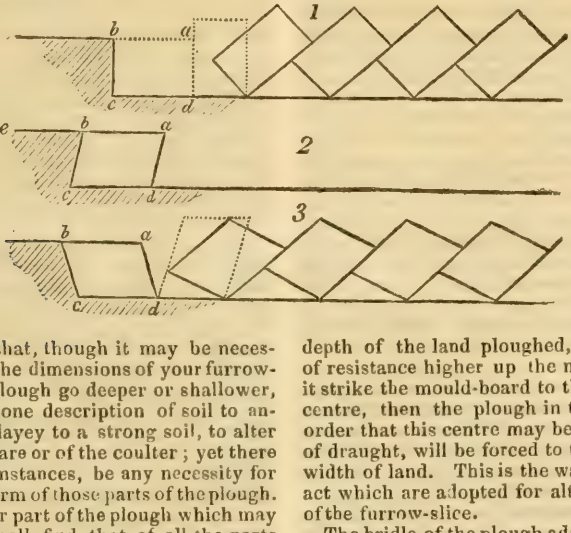


[Frame-work of Clark's Plough. Scale 1-12.]

2. *The Cutting-parts.*

The cutting parts of the plough are, the share, which cuts horizontally the bottom of the slice, and the coulter, which cuts it vertically from the fast land, of which it forms part. It is evident that these should cut it perfectly.

There should be no tearing when the mould-board begins to work. Any tearing must require an otherwise unnecessary exertion of power, and will increase the draught. In some districts an invention has been tried which does away altogether with the attachment of the coulter to the beam of the plough, and provides in its place a projecting edge, standing up from the sock on the vertical plane of the side of the plough, but inclining backwards towards the plough, at a considerable angle. This, of course, ensured the perfect cutting of the sod; but it was found in practice that it encountered more obstruction, and was more liable to bend, or, if made of cast-metal, to break, than the common arrangement for the purpose; it was, therefore, abandoned. It is evident also that the sides of the furrow-slice should be square; that the section of the sod should be rectangular. It is obvious that as the furrow-slice, supposing in the annexed figures *a b c d* to be a section of it, must turn around the point *d*, if the angle *b c d* is an acute angle, it will be held fast, and must either be thrust aside beyond the reach of the projecting ledge *e b c*, or forced through it; either of these takes place under a waste of power. In order, then, to be capable of turning, it must be either rectangular, or the angle *b c d* must be obtuse. Now there are two advantages connected with its being a right angle. A greater amount of surface will be exposed: compare the two annexed figures (1 and 3). It is evident that, other things being equal, the smaller the angle, the greater will be the surface exposed. A greater depth of mould will also be torn down by the harrows, a greater quantity of earth being raised above the general level in the form of ribs when the angle is acute, than when it is obtuse. The relative position of the share and the coulter must then be such that they may cut a square-cornered sod. With regard to their actual position in the plough, it is obvious that the more inclined they are to their work, the more easily will it be accomplished. The cut will be more gradual—less abrupt. They should, therefore, be as much inclined to their work as is consistent with a convenient form of the plough.



Now it is evident that, though it may be necessary, when altering the dimensions of your furrow-slice, making the plough go deeper or shallower, or when going from one description of soil to another, as from a clayey to a strong soil, to alter the *position* of the share or of the coulter; yet there can, under no circumstances, be any necessity for an alteration in the form of those parts of the plough. Here, then, is another part of the plough which may be constant. We shall find that of all the parts of the plough the mould-board alone will require to vary with the work to be done. There should, however, be a means of altering the position of the coulter; and this is one of the reasons of the failure of that which, as I have said, has been tried instead of it.

There are other means of regulating the position of the plough, according to the nature of its work, which should, perhaps, have been mentioned when the framework of the plough was described. It is evident that the line drawn from the horses' shoulders, through the point of attachment of the draught-chains to the plough, ought, if lengthened, to pass through the centre of resistance met with by the plough at work. Should it be otherwise—should the line so lengthened strike the mould-board at a point higher, for instance, than the centre of resistance, then the effect of the draught will be to pull the plough over, and sink the point of the share, till the implement, by increasing the depth of the land ploughed, has raised the centre of resistance higher up the mould-board. Should it strike the mould-board to the right or left of this centre, then the plough in the same manner, in order that this centre may be brought into the line of draught, will be forced to take a greater or less width of land. This is the way in which the means act which are adopted for altering the dimensions of the furrow-slice.

The bridle of the plough admits of the attachment of the draught chain to the plough being shifted to the right or left; and so it enables the ploughman to increase or diminish the width of his furrow; and the bridle, by means of a screw or otherwise (see annexed figures) may be elevated or depressed, and so the depth of the furrow may be increased or diminished.*

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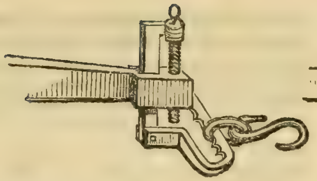
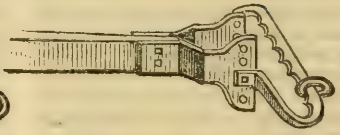
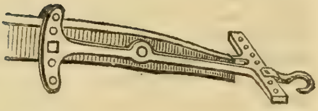
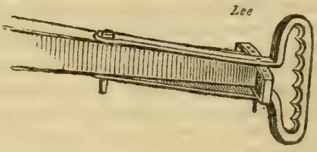
* There is another and very simple way of altering the depth to which the plough runs; and this is by changing the position of the back-band. It will be seen that by the action of this part of the harness a portion of the draught is thrown on the back of the horse, and only a portion of it remains on its shoulders. By shifting the back-band nearer to the plough, we increase the ascent of the line of draught, and of course tend to raise the point of the plough, make it work shallower; and by placing it nearer the shoulders of the animal, the plough is allowed to go deeper.









3: *The Mould-board.*

We now come to the consideration of the third portion of the plough, the mould-board. This, we shall find, is the only portion which requires to be varied ; and even in this single point it is questionable how far economy would require a variety of forms.

In inquiring what is the proper form of the mould-board, the propriety of first making an implement to do perfect work, and then altering it to diminish the power required to work it, ought to be attended to here more than it has ever been before ; for Mr. Pusey's experiments have shown how small a portion of the draught is due to the friction of the earth against the mould-board, and how large a portion is occasioned by the weight of the plough as it runs along the bottom of the furrow. If, then, we can make a mould-board which answers all our expectations, in the way of the excellence of the work it performs, care should be taken in altering its form, merely to diminish the force required to work it ; for by so doing we can at best make but a slight variation in that which is but a small portion of the draught. With regard to the position of the mould-board, it should not encroach on the cutting parts of the plough. The furrow-slice should be perfectly cut before any attempt is made to raise and turn it into its ultimate position.

I do not know what portion of the draught of the plough is due to the mere cutting of the furrow-slice, but it is evident that the tearing and breaking of the slice occasioned by the abrupt rise of the mould board in many ploughs, before it is properly cut, must greatly increase it.

The mould-board, besides being most gradual in its rise from the share, must terminate in such a manner that the furrow-slice, even supposing it to be cut of the proper dimensions, shall not merely drop off into its ultimate position, but that it shall be pressed into its proper place.* It should be twisted over so as to incline from the plough at an angle of 45° where it terminates.

In the construction of the mould-board there are two points to attend to—the length and the nature of the curve.

Both of these have hitherto been determined merely by experience. It is, however, evidently a subject capable of mathematical solution.

With regard to the first of them, the mould-board may be divided into two parts—first, that between the share and backwards, till by its action the sod becomes vertical ; and that between this point and backwards, till the turf by its action assumes its ultimate position. Now, as the proper length of the mould-board is that which receives least friction in turning the turf, it is obvious that the circumstances on which that length depends vary in the two portions into which the mould-board is divided.

There are two different descriptions of pressure on the mould-board, by each of which, of course, friction is produced : that arising from the mere weight, and that arising from the twist of the turf. It is obvious that it is the first portion only of the mould-board on which both these forces act. The hinder part of it cannot be acted on by the weight of the turf. It is only the force required to twist the turf that will produce friction on this part of the mould-board ; and here, after the turf has been forced over to a certain degree, its own weight will tend to twist it, and so assist the action of the mould-board.

If only the force of torsion in the sod acted on the mould-board, the more gradual the twist and the longer the mould-board, the less force would be exerted to overcome it. The longer, then, the hinder part of the mould-board is, the less force will be required to overcome the force which acts on it. The only limit to the length of the hinder part of the mould board, then, is that of convenience in the form of the implement. There is, however, a limit to the length of the first and more important portion of this part of the plough, which is imposed in another way. It has been said that if torsion were the only force acting on it, the longer the mould-board was made, the more easily would it overcome this force. There is, however, besides this, the force of gravity acting on the mass of the furrow lying on the mould-board, and the less the weight of the turf the more easily, of course, will this be overcome. The shorter, then, the first part of the mould-board is, according to this view, the less force will be required to work it, since there will be a less weight of turf lying on it the shorter it is.* There is, then, a proper dimension somewhere between the shortness thus shown to be best and the length which according to the other view is best, in which each kind of force being taken into consideration, the sum of the forces required to overcome each is a minimum. In order to ascertain this we require the knowledge of several facts—such as the nature of the twist of the least friction, the friction of soils of different kinds on iron, and the force of what may be called *anti-torsion* in sods of different forms and kinds of soil. If these were known, the question might be placed in such a form as would admit of a mathematical solution.

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* This is particularly necessary in ploughing turf, when it is difficult to bury the sward, unless the the mould-board, by a pressure on the upper edge of the sod, tend perfectly to turn it over.

* In the report, however, of the judges of implements at Liverpool, Appendix of Part VII., it will be seen that, of the ploughs tried there, those which had wheels were almost invariably the lightest in draught. —W. Miles.

For all practical purposes I conceive that a sufficiently accurate form of the mould-board might be obtained by taking a model of the twisted surface of a turf turned over forcibly into the position into which the action of a good plough would turn it. If, for instance, a turf of proper dimensions be cut, and left attached at its extremity only to the fastland—and if at a distance from this point of fixture equal to the length of the proposed mould-board, it be taken hold of and turned over, first into a vertical position, and then into its ultimate position, 45° beyond the vertical—it is conceived that the surface which it would present would be that of a very excellent mould-board; one, at any rate, approximating to that of least resistance. It is evident that this form would be very gradual in its rise, and nowhere abrupt in the twist which it would give to the sod; and it is evident that it would nowhere be full-breasted.

Before leaving the subject of the plough, a word or two must be said on the question of wheel and swing ploughs.

It is evident that unless the wheel can be proved to be an advantage, it is a disadvantage, as it increases the complexity of the instrument.

The most that can be said for the wheel is, that on flat ground it keeps the furrow-slice of uniform depth. Now any irregularity in this matter must be owing to one of two causes—either to a faulty workman or to an imperfect arrangement of the draught-chains on the bridle of the plough; and neither of these things can be justly brought forward to justify any alteration or addition to the plough, for both can be remedied without it. If this be the only defence of it where the ground is dry and flat, what can be said in its favour where it is irregular and wet? The wheel cannot diminish the draught of the plough by lessening the pressure of the implement on the furrow, which has been shown to be the source of the greater part of the friction. If there were one wheel behind and another before the plough, they might have this effect; but this would be too great a complication of the implement.

However, in Stirlingshire, they have ploughs which rest not on the sole-plate, but on a small wheel below the mould-board, which is said to diminish the draught considerably. This, however, where the land is wet, soon clogs, and it thus increases the draught. The remark made by a practical man on the subject, when the Norfolk wheel-plough was brought into Berwickshire, is very applicable:—"I believe it is not found universally applicable in grounds containing irregularities of surface and numerous stones, both of which are apt to force it, by encountering the wheels, from its proper direction. Besides, I am apt to believe that the chief use of the wheels, in favourable soils is to relieve the ploughman from attention and labour, by adding considerably to the draught of the horses."

4. *The Harrow.*

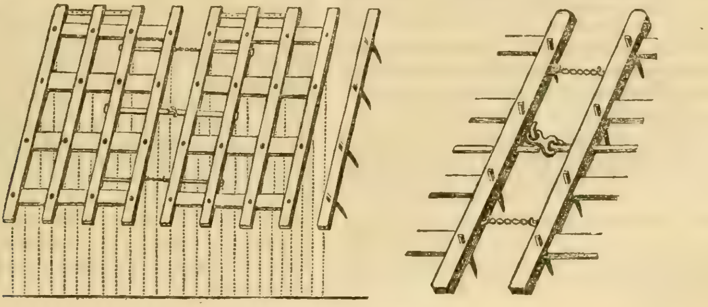
In describing this implement I shall follow the rule I have already imposed on myself, first considering its object and use, and then pointing out what form best answers the purpose intended.

The harrow is required not merely to break the surface clods of rough ploughed land, nor to gather weeds out of it, but a great part of its value also depends on its power of loosening the surface of the soil, and thus allowing the air access to the roots of the plants growing on it, and to the manure lying in it. This is evidently the case from the advantage, frequently most marked, that attends the use of this implement in spring, over young wheat or corn of any kind. A harrowing in such a case, which would appear most likely to destroy the young plants, is found to cause them to sprout and shoot out with increased vigour. This is especially the case on those soils which are termed sleepy, from their tendency to run together after rain, and thus to form a surface almost impervious to air. The harrow is used for three purposes,—first, to break the surface-clods, and reduce the surface of ploughed land; secondly, to gather together and shake out the weeds that are in the soil; thirdly, to cover the seed.

For the last purpose a lighter implement is used than for the former, and the teeth are nearer together.

The common form of the harrow, it is evident, is not a good form; the teeth are closest together in the front part of the implement, and the distance between them widens towards the end of the machine. Now, if it be used to reduce a rough surface—if there is to be any irregularity in the distance of the teeth—they should be nearer towards the back part of the machine; for the clods of earth will be partially broken by the front teeth, and will thus be more efficiently acted on by those behind. It is evidently incorrect to have the teeth closest where the earth is roughest, and farthest apart where it is finest.

The best form of the harrow is the rhomboidal, with the teeth at equal distance throughout. A pair, when hinged together, gives sufficient work for a pair of horses. It is this form alone which ensures that all the teeth shall work in different paths, and that thus the whole of the ground shall be uniformly stirred and broken: a consideration of the annexed figure will make this appear.



[Rhomboidal Harrows.]

In many districts the harrow is used not merely to reduce the surface of ploughed land by tearing down the lip of the furrow, but to stir and lift the furrow-slice to its whole depth. This is not the proper office of the harrow; it should be done by the grubber. The use of heavy drags for this purpose, and the application of great power to work them (I have frequently seen teams of six and eight oxen drawing a single heavy harrow or drag), cannot be economical; it would be much cheaper to use an implement for the purpose manageable by two horses. The grubber, or cultivator, presently to be described, is such an implement.

Though, however, the harrow should not be employed to stir the whole depth of the furrow, it should stir it *perfectly* to the depth to which it goes, and for this purpose it is well to give the teeth a slight inclination forwards, that they may have a sufficient hold of the ground. Their length should be just the depth to which they are intended to go (4 or 5 inches is sufficiently long), and they should not be fastened in by being rivetted into a plate of iron screwed on to the beams of the harrows; but they should be slightly of a wedge-shape, that, whenever they get loose, they may be fixed by merely driving them in with a hammer. The tines should, for this purpose, project somewhat above the beam or spar through which they pass; and thus, when the working part becomes worn, it may be lengthened by driving them farther in.

There is another advantage in having the tines of the harrow short: the surface of the land is much more perfectly reduced by it when the frame-work actually lies and rubs along the ground, than when it rests on twenty or thirty long tines, as it does in the long-toothed drags. The implement thus combines the properties both of a roller and a harrow.

The rhomboidal form of the harrows, which ensures that the teeth shall all proceed in different paths, is the best form for all the three purposes to which the implement is applied. It is best for reducing a rough surface, for gathering and shaking out weeds, and it is best for covering the seeds. For the latter purpose a lighter harrow with a greater number of teeth may be used, for the land is generally reduced to a good tilth before the seed is sown; and the implement has not to contend with any irregularity or roughness in the surface.

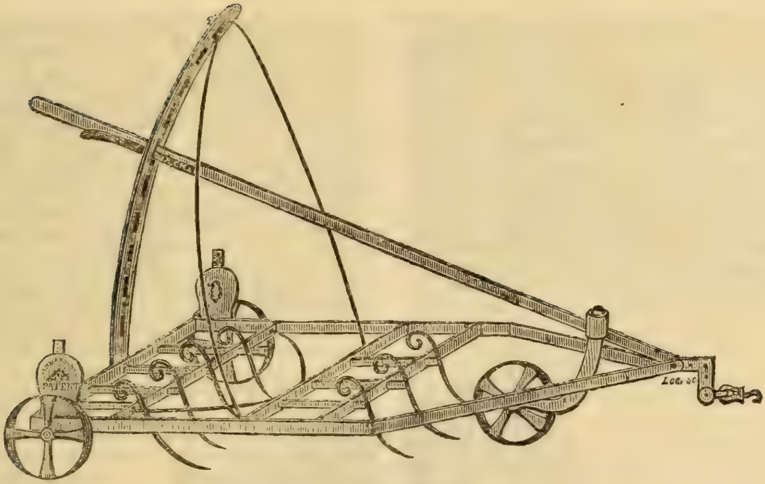
There is one other point to be attended to in the construction of this implement; and that is, the joint or mode of connection between the two portions of which it is composed. This joint should be such as to allow of free and irregular motion in the two parts of the implement; at the same time that it effectually hinders any chance of the one part becoming interlocked with or riding, as it is termed, on the other. The above figure represents a good description of joint; it allows of great irregularity in the motion of the implement; while the double joint in the middle, with the chain at either end, hinders every chance of the one part becoming interlocked with the other.

5. *The Grubber or Scarifier.*

The next implement we have to consider is the grubber or cultivator. The action of this is somewhat similar in principle to that of the harrow, but it is much more perfect. Land is frequently worked with this implement without the use of the plough at all; and this perhaps is the most efficient way of cultivating land off which turnips have been eaten, and preparing it for the barley-seed. The manure left on the ground by the sheep thus still remains near the surface; it is not buried at the depth to which it would be turned over, had the land been cultivated by the plough as deep as it is by the grubber. There is no implement whose action leaves the ground in such a healthy state as this. The teeth tend to clear off weeds, and at the same time to lift and loosen the soil in the most perfect manner.

The first grubber of any note, though before that there had been many an implement of the kind employed, was Finlayson's. It consists of a frame-work which is supported by three wheels, one in front and two behind. In this frame-work there are two rows of teeth; the hindmost row has one more than the front row; and the front teeth are placed opposite the centres of the spaces between those behind them. The consequence of this is, that, while the distance between two teeth in any one of the rows is one foot, yet the distance between any two adjacent paths of the teeth through the ground is only six inches, for the paths of the front teeth lie between those of those behind. The frame is raised or lowered by means of a lever, which acts on the projecting-bar or crank by which the front wheel is attached to the frame, and gives it a less or a greater degree of inclination; thus letting the machine into the ground or raising it out. This lever is managed by the driver behind the machine. There is, however, no simple means of raising the back part of this machine. It is necessary to fix on the depth you are to work it before you commence work in the day, and set the implement accordingly. The means of doing this consists of a pierced vertical bar which connects the frame-work with each of the wheels, and to which the frame-work is attached by means of a pin. If it be too high, the pin must be lowered; and *vice versâ*.

The characteristic feature of this implement, however, is the form of its teeth (see annexed figure). This form is calculated to hinder clogging. Earth full of couch or other weeds coming against it will not stop there, but will rise over the tooth, and fall down on either side, the earth below, and the weeds above, on the surface of the land. The faults of this machine are three: 1st. The wheels are always made too small, and the frame is too near the ground, so that in working rough land this clogging takes place in spite of the excellent form of the teeth. 2ndly. The clogging takes place also from another cause. It will be seen that the distance between any two adjacent teeth, according to the arrangement in this machine, is only double of the distance between the paths of the teeth—only one foot. Rough, cloddy, and couchy ground will thus soon stop the machine. This may be remedied by a different arrangement, as that in the annexed figure for instance, where the distance between any two teeth is four times that of the space between any two adjacent paths of the teeth in the ground. 3rdly. There are no simple means of lifting the machine wholly out of the ground: the front part may be raised, but the hind part remains.



[Finlayson's Patent Harrow.]

Kirkwood's grubber, an improvement on Finlayson's, was intended to remedy some of these faults. For the third one he had a very neat remedy, which is best understood by the drawing which represents the frame-work in two different portions, depending on the degree to which the handles are depressed. (See p. 98, Low's "Practical Agriculture.") It will be seen that the frame-work is lifted partially out of the ground by this means, both ends being raised at once by depressing the handle. In this machine the second fault is also remedied by an arrangement of the teeth, such as that represented in the annexed figure. It will be seen that the distance between any two teeth is much more than twice the distance between the paths of the teeth through the ground. Kirkwood, however, abandoned Finlayson's form of the tooth, and substituted one such as that represented in page 123; and in his machine the first fault of Finlayson's grubber remains in full force—the frame-work is too near the ground.

Biddell's scarifier is another implement of this class, much stronger and more clumsy; the frame-work* is similar in form to Finlayson's, the teeth as before being arranged in two rows right across the direction of the path of the machine. It is supported on two large wheels behind, and two small ones in front, by which it is raised twenty inches off the ground, much higher than in Finlayson's. There is, above the machine, a complicated apparatus for lifting it out of the ground. The front part is raised by one lever, and the hinder part by another. The form of the tooth has nothing to recommend it: it is necessarily strong, and is attached to the frame-work by bolts: to this tooth either a chisel-edge or a duck-foot may be attached; the one being intended to stir the ground merely, and the other to pare its surface. This machine, from its height off the ground and its great strength, is well calculated to work very rough and couchy land. If, however, the ground is damp when the paring-teeth are used, it is impossible to work it, as it immediately clogs. The whole of the machine is of cast-iron, and the teeth are therefore liable to break in stony ground. Four horses are required to work this machine; it is made nine teeth wide = four feet six inches; five teeth in the back row, and four in the front.

Another implement, a very great improvement on Finlayson's harrow, has been put forth by Scoular of Haddington, who supplies them there at 7*l.* each. The form of the frame-work, the form of the teeth, the arrangement of the teeth, and the height of the frame-work, are however the same—still faulty. The improvement consists in a simple means of raising or lowering the frame-work altogether, and of keeping it at any one depth. It will be understood from the annexed figures, which give a side-view and a ground-plan. It is much simpler than Kirkwood's, and possesses, by means of the notched upright, a very simple method of keeping the machine at one depth; the lever or handle by which it is raised is merely fixed in one of these notches: this is effected in Kirkwood's grubber in a complicated manner. Finlayson's, Kirkwood's, and Scoular's are wholly wrought-iron, except, of course, the wheels. Now taking Scoular's as the best of the four for general purposes—and here I may say, that having only five teeth, and working a width of three feet, it is perfectly manageable by two horses—if we first take Scoular's machine and point out all its faults, we shall see how these have been remedied in a machine, the invention of the managers of Lord Ducie's Iron Works at Uley, in Gloucestershire.

1st. The wheels are too small; the frame-work is greatly too near to the ground.

2nd. The teeth, being in two rows right across the path of the machine, are only twice the distance from one another that exists between any two adjacent paths or ruts made by them in the ground.

3rd. The teeth being in two rows, there is necessarily a tendency in the bars to which they are fixed to twist, for there is not the strain of one only, but of three teeth, all acting on one bar, tending to twist it.

4th. The teeth, though of a good form with regard to their general figure, are not good, if we judge of their strength by their section. This is broader than it is thick; whereas, to stand the great strain placed on them when at work, it should be much thicker than wide. This fault occasions, when the machine is at work, an almost constant recurrence to the smith's shop, the teeth becoming bent.

5th. The whole machine, being of wrought-iron, is expensive.

6th. Although the mode in which the implement is raised out of the ground answers the purpose perfectly, and is beautifully simple, yet it is difficult to manage. It is as much as a man can do to lift it out of the ground at the end of the field, when it is at work. And the difficulty is due in part to this circumstance: it will be observed that the cranks by which the hind wheels and front wheels are attached to the machine all lie behind their points of attachment—they incline from the horses. Now, in consequence of this, in raising the machine, it is evidently by the action of the lever pulled towards the driver—pulled backwards, and thus in lifting it out of the ground the man has not only the mere weight of the implement to lift, but he has to overcome the whole force of the horses which pull it forward, and thus tend to keep it in the ground. These points, then, require alteration, and at the same time an implement was required which should be as efficient and as easily drawn.

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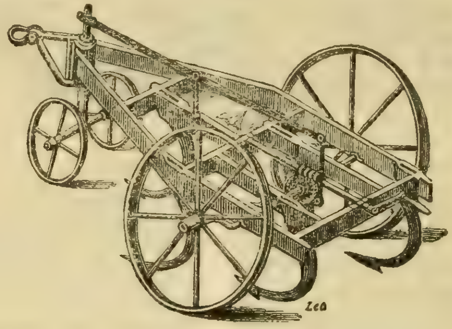
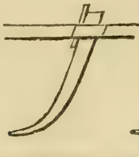
* See Journal, vol. 1, p. 357.

With regard to the first point, the Uley Cultivator rests on four wheels; the front ones being eighteen inches in diameter, and the hind ones three feet four inches in diameter. From the front ones rises an iron rod, having a circular section which passes through the point or nose of the frame-work; the hindmost ones rest on cranks on an axle which runs straight through the frame-work: the frame-work is thus twenty inches off the ground.

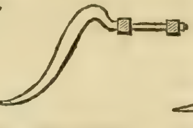
2nd. The teeth are not placed in rows, but are arranged as in the annexed figure (p. 16), and somewhat similar to the arrangement in Kirkwood's grubber. The space between each is thus two feet—twice that of Scoular's, while the distance between the paths of each is only 6 inches, the same as in Scoular's. On the points of these teeth, either chisel-shaped or duck-foot or triangular edges for paring are slipped, the form of the tooth on which they slip being such as to hinder these teeth from slipping round. This, with the form of the teeth, is represented in the figure; the teeth for paring are much more pointed than those of Biddell's with which they are compared in the annexed figure. The implement has been tried for paring as well as for stirring, and is found to move the whole surface of the ground most perfectly.



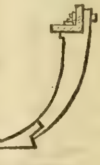
[Lord Ducie's Cultivator.]



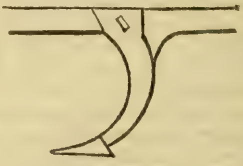
Kirkwood's.



Finlayson's.



Biddell's.



Uley Cultivator.

3rd. The frame-work does not, as in Finlayson's harrow, consist of a series of cross bars, into two of which the teeth are fixed in two rows, but it is as in the annexed figure; each tooth having its own bar, to which it is affixed, and not being attached in a direction across the bar, but in the direction of its length, so that any strain on it cannot tend to twist it.

4th. The tooth is not of the same form as Finlayson's, but it has, as Finlayson's, a self-cleaning form. This will be understood from the figure of it given above. It will be seen that the rise for the first five inches is most gradual, and that any couchy earth or clogs coming against it will not be stopped by it and clog it, but will rise and tumble over, and fall aside, and so pass by. This, with the height of the frame mentioned in No. 1, and the distance between the teeth, spoken of in No. 2, hinders any possibility of the machine being clogged in fast-land.

5th. The machine is partly cast-iron and partly wrought; and thus while the liability of Biddell's to break is avoided, the advantage of having the cheapness of cast-metal is partly ensured. The sections of the teeth, given in a figure above, show that they are strong enough. Their strength is increased by having an abutment on the frame, against which they rest. The manner in which they are fixed to the frame is also such as to increase their strength. They are made slightly taper at the place where they are keyed in, so that a blow of the hammer makes them fit perfectly accurately to the frame. They are not fixed by wedges, as the coulter of a plough, but by a key which passes through the frame, through both the mortice and tenon, and thus holds them fast.

6th. The mode in which it is raised out of the ground, and the plan by which its depth is regulated, is an invention of Mr. Clyburn, of Uley Works. The ease by which the operation is performed is greater, and the complication of Biddell's sacrifier is avoided, while the regularity and parallelism of the motion of the frame work, as it is raised or lowered, is as perfect as in Scoular's or Kirkwood's.

The hinder part of the machine is, as in Schoular's implement, raised by increasing the inclination of the cranks which attach the hind wheels to the frame. In this, however, instead of inclining backwards, and thus requiring, on lifting the machine, an exertion of force, as we before explained, against the whole pull of the horses, the crank is thrown forward in exactly the other way; and thus the whole force of the horses, instead of being exerted against the effort of the driver to raise the implement out of the ground, is actually exerted in assisting him to do so.

The front part of the machine is not raised in the same way as the hinder part, by a crank on the front wheel, but it slips up and down the verticle pole attached to them, and is raised in the following way: the cranks of the hinder wheels are attached to an axle, which passes through the frame, and thus supports it. On this axle a toothed wheel is fixed; this toothed wheel is worked by an endless screw on a shaft, which also works in the frame of the machine. This shaft working by means of this endless screw, a toothed wheel on the axle across the implement is necessarily parallel to the length of the machine, and is turned by means of a crank-handle above. Turning this handle round in one direction, it is evident that the axle on which the toothed wheel is fixed will be turned round, and the crank of the hind wheels raised, and thus the frame brought nearer the surface of the ground, the teeth let deeper into it; by turning the handle the other way, the hind part of the machine is raised.

In order to get the front part of the machine raised and lowered exactly as the hinder part of it, the following simple method is adopted: on the axle of the hinder wheels a crank is fixed, attached for greater simplicity to the pinion before mentioned. It is the same length as the crank of the hind wheels; when, therefore, the pinion is turned round, these wheels being by this crank raised, that is, the frame being lowered, say 2 inches, the extremity of this crank is lowered 4 inches.* From the crank a vertical rod rises, which is attached to one end of a lever resting at the other end on the verticle rod at the front of the machine, and attached exactly at the middle by means of a rod of iron to the frame-work of the implement. When, therefore, the point of the crank is lowered 4 inches, the hindmost extremity of the lever is also lowered 4 inches, and, as it rests on the top of the vertical rod at the other end, it depresses the rod in the middle and the frame-work attached to it exactly 2 inches, the same as the hind part of it. The perfect parallelism of its motion is thus ensured, while the mode of lifting it requires but a small exertion of force. The implement is altogether about 6 cwt. in weight. It is supplied at Uley at prices varying according to the size, weight, &c. at which it is ordered; certain forms of the implement being intended for two horses, and others for four. Before leaving this subject I wish to say a word which might perhaps have been more properly placed in the account of the plough.

The looseness in which the use of this implement leaves the land is, in every case, except when dry weather is anticipated, the most advantageous for the germination of the seed or the growth of the plant.

It has been customary to trample and roll, and by every means firm the land after wheat-sowing, to hinder the frost from throwing the young plants out. On this account, when my father stated his intention to a party of farmers who were walking over Whitfield Example farm, of sowing wheat on a field which had been subsoil-ploughed in the spring, and had borne an excellent crop of swedes, and which was then, after having been cultivated with Scoular's implement, in as loose a state as possible, they tried to dissuade him, and foretold that the young plants would, on the first frost, be thrown out. The plants certainly sustained some severe frosts, but the result showed the fears expressed to have been unfounded. The Norfolk farmers, I believe, are very careful, in ploughing for wheat, to break the furrow-slice as little as possible, and to firm the land as much as possible, before sowing their wheat. They find that this tends to hinder the frost from throwing out the plant. May not this throwing out by the frost, upon wet land at least, be explained in this way? The rain falls on such land, and sinks in till it comes to an impervious bottom, at no great depth, where the land has never been stirred by the plough or otherwise. It remains there, and, on freezing in winter, it of course forces open the land, and the plants are thrown out and killed. There are two ways of hindering this: one is to trample and roll the land, and make a hard surface, so that the rain, on falling, flows over the surface and is carried away by the open furrows. It thus does not sink in. This is the plan generally followed, but it often fails, as I believe the experience of many would testify. Would not the better plan be to drain the land and put in the subsoil-plough and work it with the scarifier? The rain, on falling, will certainly sink in, but it will sink far beyond the reach of the frost, and will be carried away by the drains, the plants at the same time deriving all the advantages of a free and open soil.

[*To be continued.*]

TO THE EDITOR OF THE FARMERS' MAGAZINE

Sir,—As you have done me the honour to reprint some communication of mine to the "Lancaster Guardian" in your widely circulated magazine, I will thank you to publish the following extract from the works of the late Sir H. Davy—either as a separate communication along with his note, or as a concluding portion of paragraph 148.

"In the year 1804, for a particular purpose of geological inquiry, I made an analysis of the porcelain clay of St. Steven's, in Cornwall, which results from the decomposition of the felspar of fine grained granite. I could not detect in it the smallest quantity of alkali. In making some experiments on specimens of the undecompounded rock taken from beneath the surface, there were evident indications of the presence of a fixed alkali, which seemed to be potash. So that it is very probable that the decomposition depends on the operation of water and the carbonic acid of the atmosphere on the alkali forming a constituent part of the crystalline matter of the felspar, which may disintegrate from being deprived of it."—(Davy's Works, V. 91.)

Lancaster, June 3. J.

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* Two inches by the action of the crank, and other 2 inches by the lowering of the frame to which the crank is attached.

THE TURNIP.

Next in importance to securing the "golden grain" when arrived at maturity, must be ranked the management of the turnip crop, the foundation of the whole rotation of cropping on lands adapted to its cultivation. We have already called attention to Mr. West's book "On the Turnip," sold by Ridgway, the perusal of which we strongly recommend; but at this season we do not think we can place any thing before our readers which will be more really and immediately useful to them than his remarks upon "turnip hoeing." He observes—

"Imperfect hoeing and singling is an evil of no small magnitude, and it is of so much the more consequence, because it is not confined to the class of bad or indifferent farmers. Persons who are, in many respects, examples in their style of farming, which their neighbours would do well to follow, partake largely of the prejudice against the *free thinning* of their turnip crop—they cannot bear to see a fine plant cut up, and hence, they leave them *much too thick*, and lose both in the *quantity* and *quality* of their crops.

"Others who are moved by better intentions, and more enlightened views, suffer serious damage to their crops from *delay* in thinning; this delay most frequently arises out of their setting on *an inadequate number of hands*. They do not seem to be aware that even harvest operations themselves are not more important than a prompt and adequate attention to the thinning of their turnips. But this is not all; the application of the horse-hoe must be rated just as highly; for, if the necessity of looking after the hay crop in fine weather has been in past ages so estimated as to give rise to a proverb which has obtained universal acceptance, so might the horse-hoeing of turnips. To all growers of turnips, then, I would emphatically say, '*horse-hoe while and whenever the sun shines.*' The thinning of turnips should be commenced when the extreme points of the leaves may measure about two and a half inches; and if a farmer has a considerable breadth of land sown, and if he have not sown them at different periods, to cause them to come in more conveniently he must, particularly in fine growing weather, employ a *large force*, and get them done *quickly*. The *same men* ought to be employed, every year, as far as is practicable, to *hoe turnips*, and they may be followed by boys to single them out: these boys will soon acquire considerable cleverness and readiness in doing their work, but it will always be advisable to have *one* trusty person to direct their labours.

"No absolute rule can be given as to the distances, but it may be safely affirmed that for common turnips drilled eighteen inches apart, from seven to nine inches, and for Swedes, where the rows are twenty-seven inches apart, from twelve to fourteen inches is near enough; the condition of the land and other circumstances, which it is impossible exactly to anticipate, will help the farmer in deciding this interesting point, but, whatever he may determine to prescribe as the exact distance, his principal duty will be to see that they *shall* so stand, and in all cases *singly*, when the work is finished.

"The work of thinning is often well done with the *common hoe*, but upon this, as upon almost every other implement, an improvement has been made. The *triangular hoe* which is made at Birmingham, is undoubtedly the best adapted for *turnip hoeing*. A gentleman who uses no other, and whose opinion I asked as to its merits, writes of it thus:—'The triangular hoe has great advantages over the common one, in having three cutting faces; when the soil is wet, and the hoe is clogged, one cleaning cleans three hoes; but it is in the corners of the hoe affording such facility in *picking out the plants* that its great superiority consists.'"

GENERAL DRAINAGE AND DISTRIBUTION OF WATER.

BY J. BAILEY DENTON.

J. Ridgway, Piccadilly.

This is an important subject to the agriculturist, and cannot be too often discussed. The able writer in the pamphlet before us, has gone into the subject *con amore*. He commences by some remarks on British cultivation, its protection and advancement, and urges the necessity of bringing more of our waste land into cultivation, advocating at the same time the superior culture of the lands already in use, for the purpose of rendering us less dependent upon foreigners. He observes—

"It is admitted by all who understand the subject, that where drainage has been carried on upon correct principles, and with proper skill and energy, 8 bushels or one quarter of wheat per acre, has been added to the annual produce. 10,000,000 out of 12,000,000, are usually allowed as the undrained or ineffectually drained acres under tillage; and as the strong lands are those which stand most in need of drainage, and are also the best wheat lands, it may be assumed that five-sixths of the land under wheat may, by being drained, yield a quarter more per acre on the average, which will be a little more than 3,000,000 of quarters annually, and this added to the quantity quoted as the present estimated produce, will bring the supply as much above the demand as it is now below, which will more than compensate any deficiency which may be felt on the repeal of the Corn Laws, by the withdrawal of the poorer lands from tillage."

Speaking of the advantages of preserving the refuse of towns, &c., which is now for the most part lost to the country, the author sensibly remarks—

"That as Government has promised to introduce a bill for the sewerage of towns, to supersede that of the Marquis of Normanby, an opportunity such as is never likely again to occur presents itself, of securing to the land as manure the refuse of the towns, of which there are in England and Wales 230 with populations varying from 262,000 to 20,000, exclusive of the metropolis, producing annually above 3,000,000 tons of disposable manure, capable of enriching an area of 1,000,000 acres. By a junction of the plan I propose for the drainage of land with the measure for the sewerage of towns, the levels and outfalls would be so managed as to effect the object. If the legislature should sanction and direct this truly national undertaking, land-owners and occupiers would unite in carrying it out with spirit and effect in the subordinate drainage of their lands; and their productiveness of the country would, from that time, become susceptible of the beneficial application of all those various improvements which mechanical science and chemical knowledge could suggest."

Intimately connected with the subject of drainage is the use to which the water thus obtained can be applied. In many districts the water so drawn off would be highly valuable. The primary service would undoubtedly be for irrigation; but the secondary purposes for which it may be rendered available are very numerous. Among these are reservoirs for agricultural purposes, fish-ponds, the movement of machinery, &c. All these are incidentally adverted to, and the author sums up as follows:—

"It has been calculated that, where the land before draining is very moist, the drainage water will irrigate in a proper manner, one-fifth as much water meadow as the land drained. But this is too much for the average of England, and we must not allow more than one-eighth, and perhaps one-tenth would be nearer the truth.

"The usual estimate is, that 10,000,000 of the 12,000,000 acres of arable land in England and Wales require drainage; and in order to carry the system of irrigation as far up the hills as possible, 10,000,000 more out of the residue, and which require draining, would be added to that amount. All this could not be done in a year, or probably in a century; but it is a result which could be aimed at, and therefore it may be kept in view. Water sufficient to irrigate about 20 acres would, on a wheel of 20 feet in diameter, give one horse power; and if we divide by this, the 2,000,0000 acres, irrigated by the drain water of 20,000,000 acres, it would give us a power of 100,000 horse power, upon a single fall of 20 feet. But when tanks and reservoirs are used, the last, if there are more than one, should be made to answer as mill-ponds. During heavy rain this would retain the flood water and the substances with which it was charged, and thus conserving both the fertilizing and the mechanical power in those places where they might be most advantageously applied."

In another place Mr. Denton, speaking of the subsequent application of the water, remarks:—

"There are many works in the United Kingdom affording us instances of the conservation of waters derivable from mountain and hill streams, and being analagous to the subject clearly prove the practicability of saving and collecting the surface waters. There are the Bann reservoirs in the County Down, Ireland, which receive the streams from the Mourne mountains. Previous to their construction, the lower lands in the neighbourhood were devastated by floods at one season, while at another they had not a sufficiency of water for agricultural purposes. The mill-owners, too, were deficient for months together before these works were completed, and now they have not only a constant supply, but a superabundance all the year round. It is so, likewise, in many places in Wales, and in considerable mill-works, the proprietors of which would otherwise be at a loss for motive power. At Greenock, there is a striking instance of the economy of this means of collecting water when there is abundance, to provide for the time when the dryness of the season would cause a failure of the springs; in this case, the whole town is supplied with a sufficiency all the year round for the wants of its inhabitants."

CORN RETURNS.

(From the London Gazette.)

Notice is hereby given, that the Commissioners of Excise have appointed the following places, within the respective cities and towns after mentioned, as the places at which the accounts and returns of all corn purchased in the said cities and towns, respectively, are to be made and delivered by the several persons required by the Act 5 Victoria, sess. 2, cap. 14, to make and deliver the same, that is to say:—

Locality of the Inspectors' Offices.

Cheshire.—Congleton, No. 2, Moody-street; Macclesfield, Macclesfield Hotel; Stockport, Excise Office, Dog and Partridge, Churchgate.

Lancaster.—Blackburn, Permit Office, Paradise-lane, King-street; Rochdale, Permit Office, No. 160, Yorkshire-street; Liverpool, No. 18, Drury-lane.

Nottingham.—Retford, White Hart Inn, Market-place.

Leicester.—Hinckley, Bull's Head; Lutterworth, Excise Office, Denbigh Arms, High-street.

Northampton.—Peterborough, Angel Inn; Daventry, Market-hill.

Warwick.—Warwick, West-street; Stratford-on-Avon, High-street.

Worcester.—Bromsgrove, Hop Pole, High-street; Kidderminster, Swan-street; Stourbridge, Three Crowns Inn; Evesham, Excise Office, Cross Keys.

Gloucester.—Cheltenham, York Tavern; Dursley, No. 4, Prospect-place; Stroud, White Hart Inn.

Somerset.—Somerton, Red Lion, High-street; Shepton Mallet, Excise Office, Hare and Hounds.

Devon.—Okehampton, White Hart; Tiverton, Excise Office, Three Tuns Inn.

Cornwall.—Callington, New Inn, Forest-street; Liskeard, Bell Inn, Church-street.

Dorset.—Poole, Bull's Head Inn, High-street; Sherborn, Half-moon-street.

Rutland.—Oakham, Crown Inn.

Herefordshire.—Leominster, Excise Office, Lion Inn.

Shropshire.—Shrewsbury, Excise Office, Banker-street; Ludlow, Excise Office, Elephant and Castle; Newport, High-street, opposite Town-hall; Oswestry, Excise Office, Cross Keys; Willington, Excise Office, Talbot Inn, Market-place.

Wiltshire.—Swindon, Goddard Arms, High-street; Devizes, Bear Hotel; Trowbridge, Market-place, opposite the George Hotel; Chippenham, Angel Inn.

Stafford.—Lichfield, Boar-street; Walsall, Bradford-street; Wolverhampton, Boot and Star Inn.

Herts.—Bishop Stortford, Chequers Inn; St. Alban's, Sweetbriar-lane; Hemel Hempstead, Excise Office, King's Arms; Hitchin, Bucklersbury.

Surrey.—Croydon, Green Dragon; Kingston, Excise Office, Sun Inn; Dorking, Three Tuns Inn.

Essex.—Braintree, Horn Inn, High-street.

Kent.—Rochester, 36, High-street; Dover, Royal Oak Inn; Gravesend, Catharine Wheel; Ashford, Oak Inn.

Sussex.—Brighton, Permit Office, 37, Ship-street; East Grinstead, Crown Inn; Battle, George Inn, High-street; Arundel, Bridge Hotel; Hastings, Anchor Inn, George-street; Shoreham, Dolphin Inn; Rye, George Inn, High-street.

Bedford.—Luton, Castle-street; Bedford, Red Lion, High-street.

Berks.—Abingdon, Market-place; Maidenhead, White Hart Inn; Newbury, Three Tuns Inn; Wallingford, Wood-street.

Bucks.—Buckingham, Excise Office, Cobham Arms, West-street; High Wycombe, Falcon Inn.

Oxfordshire.—Banbury, Permit Office, North Bar-street; Henley, White Hart.

Huntingdon.—St. Ives, Crown Inn.

Cambridge.—Newmarket, Greyhound Inn.

Norfolk.—Swaffham, White Hart.

Lincoln.—Barton-on-Humber, George Inn; Grantham, Excise Office, Granby Inn; Horncastle, Bull Inn, Bull-ring; Market Rasen, Greyhound Inn, King-street; Caistor, George Inn; Holbeach, Chequer; Long Sutton, Ivy Cottage, Chapel Bridge.

York.—Barnsley, King's Head, Market-hill; Doncaster, Corn Market; Knaresborough, Elephant and Castle; Pickering, Black Swan Inn, Market-place; Ripon, Norfolk Arms; Rotherham, Royal Hotel.

Durham.—Durham, City Tavern.

Cumberland.—Cumberland, Wigton, Lion and Lamb; Maryport, Sun Inn; Workington, Excise Office, Green Dragon.

Wales.—Mold, Black Lion Inn; Newtown, Bear's Head Inn; Welshpool, Town-hall; Landilo, Rhosmaen-street; Knighton, Excise Office, Globe Inn.

This list does not include all the towns from which returns are to be made, and will be completed in a subsequent Gazette.

"CERCLE AGRICOLE," OR "CENTRAL AGRICULTURAL CLUB OF FRANCE.—The committee of this club, and of which The Count de Chastellux is President, has been pleased to mark their sense of the exertions of Mr. Shaw, one of the members of the Council of the Royal Agricultural Society of England, in the cause of agriculture, by electing him an honorary member of their club in the room of M. Lullin de Châteauvieux, of Geneva, lately deceased. This agricultural club has been established eight years, and has enrolled as members nearly 500 of the highest nobility, and largest landed proprietors in France. Its number of honorary members is limited. The club has a house in Paris fitted up in a manner suitable to such an establishment. Its objects are to afford opportunity of communication amongst its members, and all persons who by their acquirements are enabled to contribute to the improvement of agriculture. It is in correspondence with most of the local agricultural societies in France, as well as with foreign societies, from all of which it gathers information, and again communicates it to those districts in which it is needed. The proceedings of the club are reported in a monthly publication, *Le Cultivateur*, in which Agriculture, Rural Economy generally, and Horticulture, Arboriculture, Cattle, Implements, Veterinary matters, and other branches incident to these subjects are treated. This publication is conducted by M. de la Chauviniere, upon whose talent it reflects great credit.—*New Farmer's Journal.*

EARLY VETCHES.

TO P. PUSEY, ESQ., M.P.

My Dear Sir,—I hasten to answer your inquiries as to the vetches which you were kind enough to exhibit to the Royal Agricultural Society on Wednesday last; and I hope the information I shall give may be the means of producing many such pieces of sheep-keep next year as I was fortunate enough to obtain both this year and last.

1st. Name of variety?

They are known in this neighbourhood by the name of the Racers.

2nd. Time of sowing?

I planted them on the 26th of August last.

3rd. Quantity of seed per acre?

Two bushels of rye and two bushels and a half of vetches; but from the rye being imperfect, I am satisfied not more than one bushel grew, which was quite sufficient; and I shall not use more than one bushel of good rye hereafter. The rye should be sown on the furrow, and the vetches DRILLED across, which seeds the land all over beautifully.

4th. Previous condition of land, with quality and **exposure?**

The condition was by no means excessive; having been clover, the second crop fed for wheat; then manured with stable manure, for Swede turnips, half of which were carted to an adjoining field; afterwards drilled with barley, which was carted in time to get in the vetches by the 26th August. The quality of the land is of a moderate description: light red in colour; subsoil in one part chalk, and the remainder gravel; not of sufficient strength to grow good wheat, but what is called in this county pretty little land. As to exposure, you well know the wild, unprotected nature of our country; not a tree or hedge-row to shelter us. This particular field has on the north side the Ilsley Down, and on the others plain open arable fields; the only sort of protection being a bank and dead hedge, to keep back the sheep which fed on the Downs.

5th. Time when feeding off began, height of vetches at the time, and bulk per acre?

I began feeding on the 5th of May, when the bulk was as much as could be grown to be eaten, i. e., any increase of growth would have been attended with a corresponding rottenness at the bottom; when raised up from the ground they were as high as the hurdles, and well blossomed. They were fit for feed a fortnight before I began them; but having a plentiful supply of Swedes, I did not want them before. My cart-horses were well pleased with the rye (which was too old for sheep) after it was taken from the cages; thus I derived a double advantage.

6th. The degree of forwardness of other crops of vetches in your neighbourhood, at the same time?

So far as I am aware, no others were at all like them; and as my neighbours, besides very many people from all parts who attended our early sheep-markets, spoke of them as very extraordinary, I believe none were so good at that early time—a time, be it remarked, when we are generally wofully bad off for sheep-keep (having no water meadows), and often obliged to support them on artificial food at great cost and annoyance.

7th. How far do you attribute the superiority of your crop to the variety; how far to the early sowing; how far to the abundance of seed used; and how far, if at all, to the intermixture of rye?

The variety is undoubtedly more hardy, and at least 10 or 12 days earlier in their growth and fitness for feed; they will contest the right to grow with rye successfully, which no other sort will do. I think the early sowing assisted most materially, inasmuch as getting the whole surface of the soil covered before winter I consider to be necessary towards early production. Thick planting of course assists also in what I have just related, and I believe the intermixture of rye to answer the double purpose of keeping the white spring-frost from the vetches, being somewhat higher, and afterwards supporting them to a considerable degree; which allows a circulation of air at the bottom, which otherwise would not be.

Having now described as nearly as possible the soil which produced, and the cultivation of a crop you were pleased to feel interested in, I hope it will be considered by my brother farmers who have not yet tried them; as I know they are well worthy any man's attention.

Sir, I beg leave to subscribe myself,
Yours, very respectfully,
East Ilsley, June 6. WM. JONES WILLIAMS.

THE TALL OAK OF HARRESHAUSEN.—(*From the Gardener's Chronicle.*)—Harreshausen is a small village of the Grand Duchy of Hesse Darmstadt, about 25 English miles from Frankfort, and 2 from Babenhausen. A considerable tract of forest lies on the west side of these two villages, and till within the last 20 years encompassed the remarkable tree of which a sketch is annexed. This tree stands about a quarter of a mile from the village, and about one hundred yards in front of the wood. It is an Oak, but of what species I am unable to determine, not having seen the acorns. It is deciduous, but retains its leaves very much later than the spreading Oaks of the forest, so much so, that at this season it is still perfectly green, while the others are yellow with the tints of autumn. From its shape and colour, it is a conspicuous object at a considerable distance, and might be taken for a Spruce Fir until the upper tendency of its branches is discovered. The total hight of this singular oak is estimated by the people at 90 Hessian feet, one-third of which is a clean bare stem of perfect symmetry and straightness. The form of the head, the compactness of the branches, and the density and black colour of the foliage, contribute to give to the tree the figure and appearance of a very fine cypress, rather than of a poplar, to which it has been compared. Much care is taken of it, a walled enclosure, with a locked door, having been built round it, to preserve it, according to the worthy forester's account, from the depredations of superstitious people, who used to come and cut pieces out of the bark and stem, as a charm—against what evil he was unable to say. There is a tradition that when the country was occupied by the belligerents in the Seven Years' War this tree was on the point of being cut down for fire-wood, when a General, whose name is unfortunately not preserved, but who happened to be an amateur of fine trees, saved it from destruction by ordering his tent to be pitched at its foot. This oak is usually propagated by grafting, the acorns not being sure to produce plants of the same strict habit; some, however, turn out the same as the parent tree. The finest I have seen are on the lawn at Wilhemshohe, near Cassel, and Mr. Wild's garden in Cassel; they sometimes assume a round bushy form, but will probably end by shooting upwards. A similar oak is said to exist in the South of France, and is known in gardens under the name of Quercus fast igiataor pyramidalis.—*S.*

THE TARIFF.

The subjoined communication is extracted from the *Morning Chronicle*, and contains materials for serious consideration.

"A gentleman intimately acquainted with Hamburg prices, has sent us the extract from a communication he received the other day from a resident in that city, in reply to certain queries regarding the cost of butchers' meat. Our correspondent states that—

"The price of meat does not vary in Hamburg according to the season, but according to the supply and demand of the salted provisions for shipping. The usual price of prime beef (retail) is 5½d. currency per lb.; about 4¾d. for ribs and sirloin. Rumpsteaks are dearer, and cost about 7d. per lb., in consequence of the prices being moderate and the great number of strangers in Hamburg, prime meat, and the best parts command a much greater price in proportion than the other commoner parts of meat, which are, therefore, much cheaper. Of mutton and veal he does not know the retail prices, but of the former very little would be imported. Meat is always cheaper in Altona than Hamburg, for the following reasons:—There is an excise in Hamburg which can either be paid per head of cattle, or per 110lbs. killed meat. In consequence of this, the Hamburg butchers buy the fattest and largest meat in order to save the excise duty, and pay a much higher price for it. The smaller and lean meat goes to Altona, and as it is bought cheaper, and no excise to pay on it, it is sold cheaper; nevertheless the difference is generally only the excise, ¼d. to ⅜d. per lb.; but the meat being so much better in Hamburg, it often happens that Altona people buy meat in Hamburg, and take it out there and receive the excise back as soon as they pass the gate. The butchers form a close corporation in Hamburg, and are limited in number. When a butcher dies, and his son or heir will not continue the business, his right is sold, and sometimes fetches 2,000*l.* sterling. The retail and business weight in Altona are the same as in Hamburg."

Our correspondent adds, that—

"There will most likely be meat and live cattle sent to Hamburg from the Danish Islands and Jutland, but as to the quantity it is impossible to say. In the first five years (he says) it would not be large, as the graziers and farmers must first breed a stock for that purpose, as there is no superabundance in the afore-mentioned places. Mecklenburg would, perhaps, deliver a quantity, but it would be very small. Hanoverians are buyers of cattle, not sellers, at least the part adjacent to Hamburg. What the price of live stock would be (adds our correspondent) I cannot tell; but killed meat in autumn and spring might most likely be shipped as follows:—

"Beef 3½d. per lb. in 4 quarters.

"Veal 5½d. per lb. in 2 halves.

"To these prices must be added the covering of baskets and the commission on Hamburg freight, and insurance to be paid by the importer in London."

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—I have been expecting for some time that another more able person than myself would be making some suggestions of the following nature; but as I have not seen anything of the kind, I beg to offer an opinion with respect to the gathering of the seed of the white clover from the seed pastures now growing. The time for gathering is when the nap is brown and ripe, in July or August, and of little use to the sheep; hence the pasture does not suffer from it. I believe that more seed is ploughed in in the autumn than would be used in sowing five times the quantity of land the following spring. I employed a woman at a shilling, and her daughter at sixpence per diem, with orders to do an ordinary day's work; and they gathered 3¼ lbs. of good seed in a day. The price at that time was 9s. 6d. per stone, or a fraction above 8d. per lb. The value therefore of their gathering amounted to 2s. 2d. per diem, leaving a remainder of 8d. clear profit, after their wages are subtracted. Moreover a great benefit arises from the seed being genuine, and free from docks, &c., &c. This circumstance makes it superior to the article when purchased of the seed merchant, and in itself counterbalances any expense of thrashing. If this system were generally practised, it would tend to lower the price ef clover-seed, it would likewise keep money at home, and above all be the means of giving employment to the poor. G. W.

South Dalton, June 10*th*, 1842.

LECTURES ON SCIENCE APPLIED TO AGRICULTURE.—On Thursday, the 23rd inst., at Havering Bower, Mr. W. M. Chatterly delivered his second lecture on the Chemistry of Agriculture; in which he treated of water, shewing experimentally its composition from its elementary gases, oxygen and hydrogen, and proved by the decomposition of water into gases the accuracy of its constitution. He described the nature and properties of water, the sources whence it was derived, the theories of clouds, rain, and dew, how it held the food of plants in solution; he described also the organs of plants, the mode in which their nourishment was absorbed and deposited in their parts. The whole was illustrated by experiments, and gave general satisfaction to the assembled audience. The subject of the next lecture, on the sources whence the other elementary organic constituents of plants were derived, and the mode of their assimilation, was announced. Specimens of a variety of new manures were exhibited, and their characteristics curiously described.

EXPERIMENTS ON SWEDE TURNIPS.

Sir,—This being the time for sowing Swedes, perhaps you may think the following statement worth notice:—A field of 4¼ acres, surrounded by elm trees, soil a good loam over a sandy yellowish clay, after having yielded in 1840 a crop of Colonel Le Couteur's Downey white wheat, amounting to 48 sacks and 13¾ loads of straw, was underdrained, and finished, being ploughed deep Jan. 25, 1841. It was cross ploughed April 1; drag-harrowed April 17; stirred with a scarifier April 21, and then weeded. The carting, spreading, and ploughing in shallow of the manure began May 1 at the rate of 8 tons per acre from an unturned heap, which had begun to be made in the field in January. It was observed that the part of the heap not carted over was in a better state of decomposition than where the dung had been more closely pressed. The field was weeded of docks, ranunculus, &c., June 8; harrowed, rolled, and clods broken; sown broadcast, harrowed, and rolled June 21-22. It was hoed twice. The following table will show the relative produce of a rod of the six sorts sown:—

	Weighed	being at the rate of				one of the largest			
		per acre.				Weighed.		Cir- cumf.	Depth.
A rod pulled Nov. 13 of	lb	tons.	cwt.	qrs.	lbs.	lbs.	oz.	in.	in.
Yellow Swede, our own seed	309	21	8	2	8	3	14	18	4¼
.. .. Matson's	306	21	17	0	16	3	1	19½	5
.. .. Gibbs ..	336	24	0	0	0	3	14	19½	5
Purple Topped Gibbs	360	25	14	1	4	5	7	23	5
.. .. Skirving's	393	28	1	1	20	5	6	23	6
.. .. Matson's	372	26	11	1	20	5	6	22½	5
Nov. 26.									
.. .. Skirving's	422	30	2	3	12				
.. .. Matson's	398	28	8	2	8				

It was observed that the rabbits preferred Skirving's to all the other sorts. Drawing for 4 bullocks began Nov. 11; 100 wethers went on the field Nov. 26, and remained until Jan. 8; after which the butcher began to draw them weekly. The Swedes were all consumed by Feb. 4.

Cobham, June 24, 1842. An Experimentalist.

[We note the remarks of our correspondent in reference to the Farmer's Almanac, and beg to state that the Editors would esteem it an obligation, if he would favour them with the tables for 1841 for insertion in the next publication.]—Ed. M.L.E.

POTATO CROPS.—M. Zeller, director of the Agricultural Society of Darmstadt, in 1839 planted two plots of ground of the same size with potatoes; when the plants had flowered, the blossoms were removed from those in one field, while those in the other field were left untouched. The former produced 476lbs., the latter only 371lbs."

FARMERS' CLUBS.

Extract from the speech of Mr. Taylor at the late meeting of the Stoke Ferry Farmer's Club.

Mr. Taylor said, I fear my services have been much over-rated, for whether fortunately or unfortunately I know not, but having no land of my own on which to try experiments, all I can do is to avail myself of the experience of those who have; and thus by observation of what is passing around me compensate as far as possible for the want of practical and personal knowledge. Gentlemen, I consider that the institutions called farmers' clubs are, if not the best, certainly among the best means of acquiring and disseminating this knowledge; for I am sure I need not take up one moment of your time in refuting the absurd objection that has been urged against them on the score of apprehended injury to the tenant, from the landlords knowing too much. Your second report has properly, and as I hope fairly noticed and refuted this objection, and therefore I need not say another word upon it: nor, allow me to add, would the subject have been broached at all in the report were you the only parties to whom it is addressed; but you will please to bear in mind that that report is not confined to yourselves alone, but finds its way into every other club in the kingdom. Therefore it was that I, having had the honour of assisting in framing the report, did deem it necessary to say a few words in refutation of what I considered and ever shall consider an absurd apprehension of a most improbable interference on the part of the landlords as a body. A landlord, if he has a mind to oppress a tenant, will never want the excuse of a farmers' club to justify him in so doing. But on the other hand, if a tenant is foolish enough to make exaggerated statements of what he can do, he ought not to be surprised at any thing that may happen; it is the just punishment of his folly, and he has nobody to blame for it but himself. My maxim is that fair statements of experiments will never produce unfair conduct on the part of a liberal landlord. If they do, depend upon it a tenant is better away from than under such a man. Gentlemen, I shall only add, that so long as you continue to do your duty as members of this club, so long shall I do mine. I regret not being able, from the want of land, to render you more effective practical service, but for want of land I must take up with paper; and perhaps after all that is the most harmless, if not the most useful mode of farming. Before I conclude, there is one thing I cannot help adverting to in terms both of congratulation and gratitude. It is the great principle you have carried out of "total abstinence from political discussion; and this too I admit at a time of all others the most tempting to invite such subjects. Gentlemen, far be it from me to impose the slighest restriction on the right of petition. You have a just right to exercise it when and where you please, but I think you have exercised a sound discretion not to have introduced the subject to the club, because I am sure that it would have led to differences, and perhaps to ultimate dissolution."

AGRICULTURAL QUERIES.

ON DRAINING.

Sir,—Being a subscriber to your "Farmer's Magazine," and having read a good deal in it about draining of land, I beg to say, that I drained last year 51½ acres of land, (that is, 27 yards in length to the acre) called furrow draining for the sum of 7*l.*; the stones being given for the leading away, which was about three-quarters of a mile to lead, and were led by the tenant.

The lands were about four yards in width, and were cut down in every furrow to the depth of fifteen inches from the surface, and filled up by putting a flat stone against each side of the drain, and then a stone between, (commonly called a plug stone) but not so large as to go to the bottom within four inches, and filled up within eight inches of the surface with small stones about the size generally used on the turnpike roads; and the stubble of the field liad upon the stones to prevent the earth from running amongst the stone, and at the same time to allow the water to filter through to the bottom.

The drains were all collected into one main drain, and run into a pond. The field has shown a marked difference for the better since it was done, and will last for a great number of years; as I have seen drains and done those which have been made above twenty years and more, and are as good as they were the first day and many years to come. I ought to have stated that I was ten miles from draining tiles; but if I could have got them I should not have used them in preference to the stone, as I have seen to a great extent both ways; but the latter are the most expensive, and the former the best. I should recommend all landlords to drain the estates themselves, and do them properly, and lay five per cent. upon the rent, which no tenant would, I presume, refuse to pay. I am convinced that it is of no use attempting to manage land properly unless it be done to make the most of it; it is like throwing money and time away if not done, and the benefit of both parties to a considerable amount.

Should you think proper to insert this in your next number,

I am, your most obedient servant,
A Yorkshire Agent.

MANGEL WURZEL.

A farmer states that, having been much struck with some observations made by Mr. Robinson at the Markethill dinner in January last, relative to the advantages of steaming food for cattle, more particularly the assertion that mangel wurzel produced more milk than turnips of any description when given to cows; he would feel obliged if that gentleman, or any of our practical correspondents, would inform him what is the expense of the apparatus, where it can be procured, and the cost of steaming a ton weight; as well as how much is necessary to be given to a cow or sheep per day, and how much the apparatus will steam per hour. He adds that he has occasionally given mangel wurzel to his cows without steaming it, and considered it was not a good root for milk.

[As to the comparative advantages and expense of raw and steamed food, a farmer would do well to consult some articles in the *Quarterly Journal of Agriculture*, vol.4, p. 378, vol. 6, p. 33; *Transactions of the Highland Society*, vol. 10, p. 253; and *British Husbandry*, vol. 1, p. 129. He will there find the apparatuses for steaming, and the whole process popularly described and explained. The price of such an apparatus we have seen quoted at 5*l.*, but this appears to be too low. Messrs. J. Slight and Co., model and machine makers to the Highland and Agricultural Societies of Scotland, are in the practice of fitting them up at prices varying from 8*l.* to 12*l.*, and when fitted up in a very superior style, with stop-cocks on the steam-pipes, and other appendages, they rise to 13*l.*—Ed. F. M.]

MANGEL WURZEL.

Sir,—I have for a length of time had the pleasure of reading your valuable Journal, and therefore I wish to ask a question or two.

I wish to know whether mangel wurzel and Swede turnips should be eaten by fat bullocks soon after they are taken up or not? and if the mangel is better eaten in the spring—March or April?

My Swedes were taken up early, but they do not keep well; they rot, and there is a great deal of waste in them. I expect there was too much dirt left about them when put away; they were in a stall, with plenty of air upon them. I am eating mangel at this time, bought at a sale at 15s. per ton; is that cheap for this season?

I believe it is generally considered not to be so fattening as the Swede; but principally for cows in milk, sows, &c. Which is the most expensive crop, and at what time should it be sown? in drill or not? Should the leaves be stripped off in the summer? Some do it in this part, but I fancy it impedes their growth.

I remain, Sir, yours respectfully,
Ilminster. M. B. Collins,
A Subscriber.

ON GYPSUM AND FARM-YARD MANURE.

Sir,—Being ignorant of chemistry, I am not able to avail myself of but a very small portion of the information valuable to farmers, contained in articles on agricultural chemistry in your valuable periodical, in consequence of the technical phraseology which more or less pervades the whole of them.

Gypsum is a fertilizer much recommended; but as it exists naturally in but few localities, I will feel obliged by any of your chemical correspondents instructing me how I can prepare a substitute for it at a cheap rate; and also give their opinion of the effect of drying by air farm-yard manure as it is taken daily from the horses and cattle, so as to admit of it being deposited by the drilling machine in the same way as is practised in depositing bone and rape-cake dust. Would evaporation consequent on drying deprive it of any of its valuable properties as a manure; and if so, to what extent?

I am, Sir, your's respectfully,
Enquirer.

"A Young Drainer" wishes to be informed how the narrow drain-tiles used in Kent answer, and whether round or pipe drain-tiles are used in any part of the county, and with what success.

A "Sheep Farmer" would feel obliged if some of our readers would inform him of the best season, mode, and implement for scarifying grass lands; and whether he should top-dress before or after the operation.

A correspondent inquires, in making manure heaps from what has collected in the yards during winter, what is the best application to prevent the escape of the ammonia? Is it best to apply the gypsum in powder as usually sold, or to make a rough sulphate of lime from the common chalk and oil of vitriol, and applied in a semi-liquid state, or to use diluted sulphuric acid alone? and whichever is best, should it be applied in alternate layers with the manure, or only a coating over the surface.

SIR,—I have this year laid down a field with artificial grasses recommended by Messrs. Gibbs and Co., with oats; and should be greatly obliged by your informing me, through your most useful magazine, the most advantageous treatment after the oat crop has been mown. Whether it should be grazed in the autumn or not? If so, by what stock? Whether closely or not? When to be manured, mown, or grazed next year? Any information on these points will be gratefully acknowledged by

A FARMER OF THE VALE OF GLAMORGAN.

The soil is a dry gravel.

A correspondent enquires the best mode of destroying ants.

ANSWER TO QUERY.

"A Subscriber" will find the particulars he requires in the number of this magazine for December, 1840, (vol. ii., p. 401) a paper on Lucerne, by Mr. J. Towers; or more recently in some excellent practical observations on the culture of Lucerne, by Mr. R. Baker, of Writtle, Essex, in the number for September, 1841, (vol. iv., p. 215). He will also find the subject adverted to at some length in a discussion at a meeting of the Rochford Agricultural Society "on the best mode of growing Lucerne," which will be found reported in the same volume, p. 460.

CALENDAR OF HORTICULTURE FOR JULY.

At the time we commence this notice the first shower of any consequence which, so far as our intelligence extends, has occurred since May 25th, is introduced by thunder. The average temperature throughout the two first weeks of June, at three periods of each day, has been—at 8, a. m., 52 deg. max.; at 2 or 3, 76 deg.; at 10, p. m., 61 deg.;—an extremely high mean, and one that offers a striking contrast with the low temperature of June 1841, which ushered in, as it prognosticated, the succeeding rainy summer and autumn. It appears highly probable that all meteorological phenomena must be referred to local electrical disturbances, too subtile to be appreciated. Science may be permitted to approach these mysteries hereafter, but at present we may satisfy ourselves that all planetary or other schemes of prognostication are utterly at fault.

Of the condition of the garden crops it is difficult to form a generally accurate opinion. Wall-fruit is very fine; and as there were very few frosty nights in April, the trees were little affected. *Apples* are not a great crop, many of the spurs and much of the bloom having entirely perished, but we perceive very little blight or insect upon the foliage. *Pears* seem numerous. Plums and cherries a fair crop, but not abundant. Strawberries have suffered much, and many of the flowers are abortive.

Peas are dry, but the quality of those first sown has been superior, and the yield not bad. The rain at the middle of June may render the summer crops exceedingly prolific, and will much assist the beans. The *brocolis* must derive the greatest benefit from a good supply of moisture, inasmuch as the seedlings are considerably droughted.

IN THE KITCHEN-GARDEN,

One of the first operations should be to sow the last crop of spring *brocoli*. *Sow* also forthwith the last crop of kidney-beans of both sorts. Many persons dwarf the runners by nipping off the leading shoot to produce laterals, which in their turn are stopped, so as not to allow the plants to exceed four feet in height. They thus become bushy, and are more at command and less exposed to wind, but we do not pretend to say are rendered more prolific.

On the subject of a supply of water, of which the present season has proved the necessity, we have to suggest that a tank of required and suitable dimensions be sunk in some part of, or near to the main garden, in a low situation, which may command all the waste water that in heavy rain flows down the walks or small channels cut about the premises. Such a tank, to contain several hundred gallons of rain-water, we lately inspected: it was in the form of a rather deep bason, built of any kind of otherwise useless bricks, but coated, where the joints were settled and dry, very carefully with Parker's cement: it cost little more than 30s. This vehicle offers the best apology for a pond, puddled at bottom with clay, which receives the drainage water of a pasture; but it has one defect—the water soon becomes rather hard, owing, we suspect, chiefly to the absorption of the ammonia contained in fresh-fallen rain by the cement. No water can possibly be so benign to plants as the pure soft drainage of pasture land, standing upon a clayey or weedy bottom. It is soft, and sufficiently replete with soluble nutritive substances.

The other vegetables to be raised from seeds this month are—*carrot*, about the end of the first week, for October; *colewort cabbage*, about the second week; and *hearting cabbage*, quite at the end; *endive* twice; *lettuce* early, and again near the close of the month; *radish*, particularly the large turnip-rooted; *turnip*, the stone or Dutch, for late autumn.

Sowings will be of little avail, unless the ground be in a free-working yet moistish condition, or made so by the previous waterings and shadings so often dwelt on; and when any seedlings rise, a person should be on the alert to anticipate the attack of slugs, by dusting over and around them with powder-lime the last thing in the evening, and again early in the morning. We learn that earwigs are very numerous again: they do sad mischief to runner and dwarf-beans.

Transplant a full crop of brocoli—the cream-coloured, Bowles' sulphur, Portsmouth, for spring—either in rows 20 inches to 30 inches, plant from plant, as the digging proceeds, or by our own peculiar method of trench-planting, manuring each trench as for celery. Distances are equally observed in both methods, but the latter obviates the necessity of earthing up or resetting, to guard against frosts. Experience seems to teach that trenched plants assume a rather dwarf habit; the stems do not become lengthy, and therefore, by the time the earth is filled in, the brocoli-plant is buried nearly to the lower leaves.

Transplant also, in good ground, some strong *endive*, giving water at the time; *cauliflower*; *celery*, a main crop; *cos* and *cabbage-lettuce*; *Brussels sprouts*; some *savoys* and late *cabbage*, of the spring-sown beds.

All green vegetables require manure, and now is the time to give it: it prepares the land for potatoes, peas, and beans, and therefore should be spread abroad, prior to digging, with a liberal hand. All these crops also like *nitrate of soda*; a single ounce, scattered over a plot large enough for one hundred cabbage-plants, at eighteeen-inch distances, will be sufficient at first; premising that when the vegetables have taken firm hold on the soil and begin to grow, each plant receive a pint of water, holding the nitrate in solution of the strength of eight ounces to twelve gallons of soft water. So much verdure of foliage is produced by this simple application, that we feel pleasure in recommending it, at the same time hinting that similar results may not be produced in every species of soil.

Artichoke plants are bearing. Remove most of the weak heads, to encourage the growth of the best; and when any head is taken, cut down the stem, or rather break it off close to the earth.

Cucumber plants in the open beds should have the shoots trained orderly and pegged down, but without much pressure, which would injure the runners.

Leeks should be set in holes six inches asunder, or in shallow, richly-manured trenches. Nitrate of soda seems to favour this vegetable. Cut and dry all the *sweet herbs* that are coming into flower, and in moist weather plant slips of each.

FRUIT DEPARTMENT.

Melons thrive well in frames without heat at this season. A difference prevails as to soil; some arguing for the stiff loam of the old practice, while others use half-decayed leaves, such as have been employed in the pine pits. A good deal of water ought to be given in the latter case, sprinkling the plants about an hour before the sun leaves the frames, and immediately closing the lights. No other practice appears so effectually to repel the *acarus*.

Pine-apples in the fruiting-house must have air in hot days, and, when ripening, but little water. The plant from which the fruit is cut ought to have the surface-soil renewed, and be watered, to encourage the suckers; two strong ones on each plant are sufficient. If the soil be good, the linings active, and due attention be paid to keep up a moist vaporous atmosphere, the *succession-plants* will grow with rapidity: these ought always to be kept in close pits by themselves.

The *middle vinery* is now bringing its fruit to maturity, and will require air to give colour. Vapours and moisture are excellent remedies for the spider *(acarus)*, but are not applicable to ripening fruit. The *late vinery* will be forward—the fruit stoning; the clusters, therefore, ought to be finally thinned, with great regularity; and full moisture may be kept up in this house till the berries begin to colour. *Wall-trees*—apricots, peaches, and nectarines—will require the summer regulation. This, if the trees were skilfully disbudded in May, will not be an arduous operation, as it consists in laying in and securing all the good and well-placed bearing-wood of the next season, and in exposing the fruit to the sun and air. Too much wood, as it only crowds the trees, is mischievous, but enough ought to be retained to make each appear green throughout.

Budding may now be performed in all fruit-trees, the criterion being the facility with which the bark and wood separate from each other. It is justly observed that budding succeeds best when performed in cloudy, showery weather, and towards evening. Some persons cover the buds and ties with wetted moss, but the practice is doubtful; at all events, every bud should be inserted on the north side of a shoot, and never towards the full sun.

FLOWER-GARDEN AND PLEASURE-GROUNDS.

Keep every part weeded, neat, and orderly, removing torpid bulbous roots, old flower-stems, and decaying annuals; sweeping, mowing lawns, and rolling the walks. If box edgings be clipt now, do not be severe, for a hot sun will produce brownness. A regular form is what is wanted. If box become too massive, it will be better to replant in September than to cut severely in the height of summer.

Carnations and *pinks* can still be propagated by layers, and many herbaceous plants by cuttings. *Roses* can be budded, and in performing the operation lambs'-wool yarn may be used instead of strips of matting—it compresses sufficiently, without contracting by wet, or bruising the tender bark.

At the end of the month begin to propagate the best geraniums, by strong cuttings, placed in equal parts of sand and leaf-mould.

EXTRAORDINARY VETERINARY OPERATION.—The rare and very difficult operation of extracting a stone from the bladder of a horse was performed by Professor Dick on an aged pony, on Wednesday last, at the Veterinary College here, in the presence of a great many of the most distinguished medical gentlemen of the city. This is the first time that this operation has been performed in Scotland on this animal, the disease being, as we believe, very rare. The stone was of a very large size, and weighed 8 ounces after its extraction, although a considerable portion of it had been broken off during several attempts at its removal, which was rendered difficult from the depth of the wound, the roughness of the surface of the stone, and the presence of a large tumour which was found to occupy the passage through which it had to be extracted. Several pair of extracting forceps having failed to accomplish this, it was ultimately effected safely by Dr. Mercer passing his hand into the cavity of the bladder; and the depth and size of the wound may be conceived, when it is understood that the whole of his hand and arm nearly to the elbow had to be introduced before the stone could be properly laid hold of. The animal bore the operation well, and on being untied walked into its loose box without apparently having suffered much pain.—*Edinburgh Courant*

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JUNE.

From the date of our last report up to the 17th of this month, the atmospheric temperature in all parts of England was, even the time of year considered, excessively hot ; yet by no means unseasonable. The long absence of moisture, however, was in many instances creative of great inconvenience to those engaged in agricultural pursuits, and produced feelings of anxiety as to the future prospects of the wheat growers, as the soil, even in low situations, presented a very parched and unfavourable complexion. Barley, oats, beans, and peas, but more particularly the latter, suffered in the extreme ; and we regret to state that the plants on many large breadths of uplands were completely stunted in their growth ; whlie in bottoms they shot up very rapidly—so much so, indeed, that they became in many cases what may be termed *spindly*. The grass likewise grew extremely fast, which prevented that portion of it usually of a short growth from making such progress as could be desired : hence, on its being mown, it was discovered to be unusually light, and, generally speaking, of middling and inferior quality : while it is our firm opinion that a less productive swathe has not been known for many years past. However, it is highly probable that a good second crop will be secured in the course of the season. On the 18th and subsequent days we have been favoured with some remarkably fine genial showers of rain, which, as might very naturally have been expected, have wonderfully improved the whole vegetable creation, and caused it to assume its so-much-wanted appearance. But we hold that the fall here mentioned has happened most opportunely for the wheats—for sure we are that, without its aid, the forthcoming yield of that description of grain must necessarily have been very circumscribed. Not that we mean to assert that equal benefit has not been imparted to the barley and oats ; yet, whenever the wheat is doing well, a certain degree of anxiety is almost invariably got rid of. The letters which have reached us from our correspondents in various quarters, are somewhat contradictory in their effect, as regards the wheat plant now on the ground : some parties have intimated that it is extremely irregular, while others would imply that no reasonable fault can be found with it. Taking, as we do, a general review of the whole of them, we are led to the conclusion that, from the present appearances of the crops, there is little probability of the approaching harvest proving a large one ; yet we see no cause to apprehend, were it only from the fact of the breadth of the soil now under wheat culture being larger than has been known for many years past, that any material deficiency in it will be apparent. These observations, it is true, are nothing more than speculative ; yet, from long experience in these matters, we certainly venture to hope that they are founded in truth, and unbiassed by any personal advantage.

There is one subject connected with agriculture at this moment, which requires particular observation — we mean the stocks of wheat of last year's growth in the hands of our farmers ; and, as great discrepancies are almost daily observable in the reports received from the grain districts, we deem it necessary to set matters right in this respect. That they are small we fully admit ; but they have not as yet arrived at so low an ebb as some parties would have us imagine. We have been told that it will require the importation of *at least* a million and a half more of foreign wheat to make good the deficiency ; but the tenableness of such a position we much doubt. It must be remembered that the whole of that grain which was taken out of bond last year, at almost nominal duties, has not as yet been disposed of, while there are upwards of 600,000 quarters under lock, and an average weekly arrival in the port of London and elsewhere, of nearly 50,000 quarters ; hence, we are almost inclined to believe that a very few thousand quarters more will form an adequate supply to make good the falling off in last year's production. The prices lately obtained for wheat may be considered tolerably remunerative, and, were the value of other grain proportionally high, no complaint could reasonably be made as to returns. But, notwithstanding all that has been asserted to the contrary, we do think that the currency of all corn has seen its highest point for the present.

The working of the new Corn Bill has been very narrowly watched, while by its operation the duty on wheat has fallen 3s. per qr., it being now only 10s. ; yet a much greater decline was at one period looked forward to. We do not apprehend a very low import upon that article for some time hence, as the trade in all parts has taken another turn ; still it is possible that it may decline to about 6s. per quarter.

In the principal market of consumption held in the country, the supplies of English wheat offering have been very moderate, but of improved quality. The best parcels of both red and white have mostly sold freely at full prices ; but the ordinary sorts have commanded little attention. This remark may also be applied to free foreign, but in that under lock next to nothing has been transacted. Barley has somewhat improved, and the rise has been quite 1s. per quarter ; but malt has ruled dull in sale, at unaltered currencies. There has been a better enquiry for oats, and the quotations have had an upward tendency. Beans and peas have been noted quite 1s. dearer, with limited arrivals.

In the metropolitan markets, large quantities of new meadow-hay have been offering, while the sale for that article has proved tolerably steady at from 2*l.* 5s. to 3*l.* 18s. per load.

Our advices from Scotland are more than usually flattering ; since not only have the wheats progressed well, but the whole range of vegetation is in a most luxuriant state, arising from rain having fallen more frequently there than has been the case in this country. The fields hold out a fair promise for abundant crops of all kinds of corn. In the different grain markets the supplies of wheat offering have been moderate, while the demand for it has ruled tolerably steady, at full prices. Barley—and, in fact, all spring corn—has had an upward tendency.

The crops are looking remarkably healthy in Ireland, but we regret to state that the stocks of grain on hand are unusually low, consequently excessively dear. This has been creative of great distress amongst the lower classes of society, and the consequence has been the commitment of various acts of insubordination, attended with loss of life. Large importations of grain are almost daily taking place at most of the principal ports, to make up, in some measure, the deficiency. The supplies of grain offering in the different markets have been small, while the demand has ruled firm at enhanced rates.

The following is our usual monthly statement of the supplies and prices of fat stock, exhibited and sold in Smithfield Cattle Market. The former have comprised 8,113 beasts, 139,490 sheep and lambs, 3,120 calves, and 2,990 pigs; while the latter have ruled as follows:—Beef, from 3s. 2d. to 4s. 8d.; mutton, 3s. 4d. to 4s. 4d.; lamb, 5s. to 6s.; veal, 3s. 8d. to 4s. 8d.; and pork, 4s. to 5s. per 8lbs. to sink the offals.

At least four-fifths of the bullock supplies have been derived from Norfolk, Suffolk, Essex, and Cambridgeshire; but the season from that quarter is now nearly concluded—the first arrivals from the north (consisting of about 200 short-horns) having come to hand on the 13th, but they exhibited a great deficiency in quality. From Scotland, there has been a decided falling off in the receipts of both beasts and sheep; but this is chiefly attributed to the high figures realized in Yorkshire, to which part nearly 700 Scots have been shipped from Dundee and Aberdeen, in the course of the month. The beef trade, as a whole, has ruled steady, and the quotations have been well supported; but the sale for sheep, lambs, calves, and pigs, has ruled extremely inanimate. Nearly 600 calves have reached Smithfield from the West of England, which have greatly depressed the veal trade; so much so, in fact, that the highest figure realized on the 27th, did not exceed 4s. 6d. per 8lbs.; yet we consider the transactions to have been conducted on what may be termed a healthy principle, though the figures obtained have been by no means good ones for the grazier. A few cases of the disease in stock have come under our notice, but they have proved of a comparatively mild character.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, June 28, 1841, and Monday, June 27, 1842.

At per 8lbs. to sink the offals.

	June 28, 1841.					June 27, 1842.				
	s.	d.		s.	d.	s.	d.		s.	d.
Coarse & inferior Beasts	3	4	to	3	6	3	4	to	3	6
Second quality do.	3	8		3	10	3	8		3	10
Prime large Oxen	4	0		4	6	4	0		4	2
Prime Scots, &c.	4	8		4	10	4	4		4	6
Coarse & inferior Sheep	3	4		3	6	3	4		3	6
Second quality do.	3	8		3	10	3	8		3	10
Prime coarse woolled do.	4	2		4	6	3	10		4	0
Prime Southdown do.	4	8		5	0	4	2		4	4
Lambs	5	0		6	0	5	0		6	0
Large coarse Calves	4	2		4	8	3	8		4	0
Prime small ditto	4	10		5	4	4	2		4	6
Large Hogs	4	0		4	6	4	0		4	6
Neat small Porkers	4	8		4	10	4	8		5	0

SUPPLIES.

	June 28, 1841.	June 27, 1842.
Beasts	2,280	2,313
Sheep and Lambs	30,680	28,930
Calves	175	202
Pigs	413	319

As is almost invariably the case at this season, the arrivals of slaughtered meat from Scotland and most parts of England, up to Newgate and Leadenhall Markets, have been extremely limited, yet the supply of meat killed in the metropolis brought forwards has been tolerably good. Trade has ruled steady, without any material alteration in prices.

SUFFOLK.

The day following that on which we forwarded our last report (May 23), we had a fine rain—we believe a general one for many miles in every direction—which enabled the farmers to plant mangel wurzel, (those who had not done so before that time); and for that which was planted there was sufficient moisture to cause it to vegetate, which is now looking well, fit for the hoe, if not already done, and that planted since the rain is making fair progress for the like operation. Mangel was not the only crop which was waiting for moisture to deposit the seed in the earth. As we hinted in our last, a considerable breadth of Barley remained unsown; that which was sown the last week in May, is nicely up and looking healthy—even flourishing; and as in many parts of this county refreshing genial showers have followed, the late sown corn has made considerable progress, but the showers have not been general—very partial. In travelling eight or ten miles in one part, you would be annoyed with dust, in another sufficient rain to run off the lands; the old saying "we shall have rain when our neighbours have," has not been fulfilled; we know of cases where there have been so much rain that the summer tilths were too wet for two or three days to plough, and within a mile not sufficient rain to break the clods. Clover and Rye-grass are now generally secured in good condition, but the *lightest crop* we have had for many years; one load per acre is a *good* bulk this year; many fields carted at half a load and less per acre. But little grass cut at present, and those upland pastures intended to mow have scarcely produced *good feed*. As the state of the growth of the corn crop at this period is of importance to give a correct report of, and as we wish not to deceive or be deceived, we must give our account cautiously. As we before stated, the wheats were a thin plant; they have nevertheless improved considerably, and to pass through the country, without going into a field to examine them, would be pronounced a good prospect for a fair crop; they will not bear the examination, and the bulk must be below an average, whether so the produce we are at present not able to state; the ears are fine, and the colour of the blade at present healthy. Of Barley, the appearance depends on the *manner and time* when put in; the early planted still keeps the lead, and promises the best crop both of straw and corn. Oats are generally "a shocking bad crop;" fortunately but a very small breadth is grown in this county. Beans are unusually luxuriant, have blossomed well, are setting well, and if they escape the louse, they promise as well as we have seen them for years. The like observations will apply to peas; they are a great length of straw, and blossomed from the bottom. Some pieces of Talavera wheat, should the present warm genial weather continue, will be fit for the sickle (perhaps we should say the scythe) in a month, and wheat generally fit to harvest the beginning of August.—June 24.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF JUNE.

As is usually the case during the month of June, the corn markets generally throughout the United Kingdom have been but scantily supplied, since our last review of the state and prospects of the corn trade, with wheat of British growth, and a steady although small advance in the value of wheat, weekly, has been the necessary consequence. At this season of the year, only the finest qualities of wheat find a market for mealing purposes, and the decline in the rates of duty chargeable on the entry of foreign wheat for home consumption consequently exceeds the actual improvement in the value which is generally occasioned in wheat at this season of the year. For the manufacture of sound flour, during the warm weather, only the finest samples of wheat can be used; and therefore, we repeat, that the average prices by which the duties payable on the importation of foreign wheat are regulated, may be sometimes materially enhanced, without any proportionable improvement occurring in the general value of this article. This is, at the present moment, as nearly as possible the state of the wheat trade. Inferior samples are positively without buyers, whilst for the finest qualities higher prices are readily obtained. It may be very naturally concluded that, during the present month, and a part at all events of August, the same causes, will be productive of similar consequences; and a material decline in the present rates of wheat duties is therefore confidently anticipated by the importers, before any large quantity of the crop now in the fields can be brought forward for sale in any of the large corn markets of consumption, and without any material improvement occurring in the average value of that part of the farmer's property now represented by old wheat. Before the month of September be brought to its conclusion, therefore, wheat and flour of foreign growth, to the extent probably of two millions of quarters, will be entered for home consumption at very low, if not at only nominal, duties. It has frequently been our duty to direct the attention, not only of our agricultural friends, but of our commercial readers, to this monstrous injustice of the corn laws; depriving the home wheat producer as it does of that degree of protection which he is entitled to receive in our markets against competition with wheat of foreign growth, and defrauding the revenue itself of a large sum of money which, under other circumstances, would be paid into the treasury for foreign wheat consumed in this country. In the present state of the British empire under these corn laws, even should the coming wheat crop prove to be most abundant in quantity, and excellent in quality—of which, however, at present there is not much prospect—nothing can prevent an immense quantity of foreign wheat from being thrown into our markets for sale during the harvest months; when our farmers are compelled to deliver grain largely for the payment of rents, farming expenses, and taxes, both national and local. If this be protective of agricultural property; if this be the best method for the improvement of commerce and of trade, and for the augmentation of the national finances—the science of political economy has either heretofore been directed into a very improper channel, or it has been very imperfectly understood by all its public professors. Our farmers pay direct and indirect taxes to a large amount, whilst the producer of foreign wheat, consumed within the United Kingdom, will this season pay only a nominal duty for the use of our markets. The present corn law may most accurately, therefore, be represented as being an act for the encouragement of foreign agriculture, and of foreign shipping, at the expence of the British landed interest and of the British ship owners. This law will likewise hereafter be of additional importance by causing an annual drain of the precious metals, thereby decreasing the means for employing the people at home, and ruinously reducing the wages of labour. Whatever the intention of the legislature may have been in passing such an act, we feel a moral conviction that these will be amongst the evils which must arise from a few years' practice in its workings. It holds out no encouragement whatever for the cultivation of the many millions of acres of excellent land within the United Kingdom, now in a perfect state of nature, and entirely useless to the British people. This act of liberality must likewise, in a very material degree, place eventually a limit to that progress which the science of agriculture annually made under the protective influence of that most beneficent corn law which the existing one has most unfortunately superseded. Had this uncalled-for alteration in the corn laws not been effected, the empire within herself would eventually have produced grain and all the necessaries of life in the greatest abundance for double our present population; general distress would have been rarely indeed experienced; and, in as far as human imperfections would admit, prosperity would generally, in the course of a few years too, have attended the labours of all classes of industry within the British dominions. So far from increasing the consumption of British manufactured goods, either abroad or at home, the new corn law must be productive of consequences the very reverse to the real interests of commerce and of manufactures. A barter trade in British goods and in German and Polish grain is utterly impossible. To have fixed the minimum duty payable on foreign wheat at six or seven shillings per quarter would at all events have improved our public revenue, and this rate of duty would not have been paid by the British consumer, but by the foreign proprietors of those lands on which the wheat so imported was produced. A charge to this extent on foreign wheat consumed here, would also not be more than a fair equivalent for the extra field expences, rent, tithes, and taxes, direct and local, paid by our home farmers on each quarter produced by them; and this duty would be cheerfully submitted to by the foreign proprietor of wheat for the advantages which he reaps in the occasional possession of our markets for the profitable consumption of his surplus agricultural produce. Had the minimum duty on wheat this season been somewhere about the charge we have mentioned, the revenue, before the conclusion of the present year, would have been augmented by upwards of one million sterling on the article of wheat alone, and not one farthing of it would have been paid by the British consumer. Like freight, sea insurance, and many other charges, it would have been considered part of the expense of importation, and it would regularly have been taken into the calculations of those merchants, who are the large importers, and deducted by them from the original cost at the foreign ports of shipment. Our corn law, however, whatever may be the intention of its framers, at present, at all events, encourages foreign industry at the expense of our own. By it the foreign field cultivator obtains productive labour in growing grain for British consumption, whilst our agricultural labourers are under the necessity of transporting themselves to the wilds of North America, because our laws favour foreign field labourers at their expense. It is not easy to comprehend the principle of giving employment to Polish serfs, Russian slaves, and Germans, whilst we have a surplus of population at home; but this is the new light which has latterly burst on the understandings of our legislators. With almost boundless channels for the profitable employment at home of a much more crowded population than is at present to be found within the United Kingdom, no necessity can exist for the encouragement now given to a continuation of emigration to the colonies to the immense extent to which it has latterly been carried. The many millions of acres of land within the United Kingdom, at present entirely useless to the inhabitants, are not nearly so difficult to be cultivated as are those wastes in the Canadas, to which we have latterly been and now are annually transporting many thousands of our most valuable labourers; nor can this system of colonization ever produce one tithe of the advantages which the empire at large would reap from the employment of these families in similar pursuits at home. It then would afford full and profitable employment for the vast amount of capital now nearly in a state of idleness, under the existing circumstances of the country. If, instead of remitting to the continents of Europe and of America one or two millions sterling in exchange for food, as we must now annually do, so long as the present corn law is allowed to grace the British statute book, this large amount was paid to the British agricultural interest, it would remain in constant circulation at home. It would be employed in home agricultural improvements, and in extending home commerce and manufactures. Through its influence the industriously disposed would find increased channels for profitable employment, and a large addition would thus continually be making to the real wealth and strength of the commonwealth. As matters are, however, at present, every pound sterling remitted abroad in exchange for food, is a loss to the British community. It enables foreigners more completely to compete in foreign goods with those manufactured in Great Britain, in all the markets of consumption to which they may be forwarded. It is in the highest degree injurious also to our manufacturers and to our artizans; in so far as it is most prejudicial to the home consumption, depriving our home consumers, as it does, of the means to pay for those quantities of goods which, under other circumstances, they would be induced to use. In the home demand the most valuable goods find buyers in favourable times, much more extensively than they do in all the other markets of the world besides; and the same remark is equally applicable to the quantity of goods of all descriptions consumed at home. We believe we may assert, without the slightest chance of contradiction, that the commercial distress now so generally complained of, has its origin solely in the virtually free trade in grain which we most unfortunately have been compelled by the elements to submit to during the last four or five years. To those states from which provisions have been received during that period to the value of upwards of twenty-five millions sterling, not one additional cargo of British goods or products of any description has been exported, but, on the contrary, the money which has been remitted to them in exchange for their agricultural produce, has been, and now is, employed in extending their home manufactures; thereby occasioning a material falling away in their imports of merchandise of every description from the United Kingdom. The official documents placed before the legislature fully establish the rapid decay now in progress in our foreign export trade with foreign agricultural nations; which circumstance in part contributes to the distress under which all our manufacturing classes are at present suffering so very severely. Our foreign export trade, however, to these states would be but of little consequence indeed did our home consumers only flourish; but the necessity, or rather choice, to import food from abroad renders this benefit for the present impossible. The agricultural interest, by the corn bill now in force, will find their means of payment for the consumption of British manufactures annually now becoming more and more limited; and as a farther impediment to them, they in future also are to be burdened with an income-tax. The farmers of the United Kingdom by the alteration in the corn laws, will in future be constrained to send their produce into our home markets, although they may be at the same time supplied to a considerable extent with grain of foreign growth, admitted there generally on the payment of only nominal rates of duty, whilst they pay heavily towards the public expenditure. In addition to these expenses, levied for the benefit of the exchequer, the legislature, as we have already stated, has in its wisdom imposed an income-tax on the farmers, and thereby must very greatly increase for the future their pecuniary difficulties; rendering them still more unable than they are at present to increase their consumption of British manufactured goods. The agricultural interest is, in fact, made the *Chancellor of the Exchequer* for the payment of all the losses sustained by commerce. The value of agricultural produce is reduced because trade for a season is not healthy, and an income-tax is imposed because the interest of the national debt, itself incurred when paper money was the circulating medium, cannot otherwise be paid in the precious metals; as the people of this empire at the present moment to their cost, know gold and silver to be. This public debt was contracted for by giving an annuity of three pounds per annum, for every sixty pounds received by the Government *in paper money*. At that time, by solemn resolutions of the British legislature, the mean value of British grown wheat was declared to be 80s. per quarter, and therefore in wheat value, which after all ought to be the standard of value, each three pound annuity was then and now is equal to fifteen quarters. The public difficulties, however, can never be removed at the expense of the agricultural interest, nor of any other interest. On the contrary, we hold that an abundant crop of agricultural produce at home, is the only remedy for the commercial and pecuniary evils under which the British empire is at present suffering. To produce at home annually sufficient for the home consumption of food, is the only certain way to provide the population with abundance of really productive labour, and to prevent that exportation of the precious metals to foreign nations in payment for foreign food, which during the last four or five years has been so extremely detrimental to the best interests of all classes within the British Empire. However desirable an abundant crop of agricultural produce may be to the general prosperity, we regret extremely to state that the prospect of such a benefit is at present by no means brilliant. On the contrary, the fields as yet show little that is cheering, or even consolatory, to the farmer in this respect. In Essex and Kent the winter-sown wheats promise not well at the time our present number goes to the press, and these are the best wheat districts certainly in Europe. The autumnal and winter months were by far too wet to permit the seed wheats being got into the ground in fair order in the principal wheat districts in England, and the unnatural heat of the weather during the last six weeks has brought the winter plants in many instances prematurely into ear almost everywhere. Besides, they are thin on the ground, and the straw is generally stunted, and unusually weak and short. The appearance of the spring-sown wheats is also rather unfavourable, originating chiefly in the state of the weather. The gentle rains which have fallen latterly, however, accompanied with mild heat, no doubt may yet be of vast importance, even under the present unfavourable prospects of agriculture at home. They will, at all events, prevent further mischief; but we fear much that they cannot undo the injuries which have been already effected. They may render the wheat crop an average one in quality, but they cannot make it an abundant one in quantity. Under such circumstances, little chance exists of any speedy restoration generally of prosperity and of tranquillity amongst the commercial and manufacturing classes of British society; depending for support, as they almost entirely do, on the prosperity of the agricultural interest at home. The precious metals will be in demand in future for the payment of foreign grown food. Speculation and enterprise will thereby continue to be obstructed; public confidence will be more and more circumscribed; and the wages of labour will be reduced more in proportion even than productive employment itself is rendered scarcer amongst the industrious classes of society. No exchange of commodities amongst nations can alter the existing laws of civilized society. Freedom of trade betwixt rich and poor communities can never be mutually advantageous, until an equality in pecuniary means be established amongst their inhabitants. Then, and not till then, can an exchange of products become generally useful and profitable; nor can a real barter be established before these preliminary alterations in circumstances be effected. Considering that the quantity of old wheat is now unusually small amongst the farmers, and that the corn merchants hold very little of home growth, the importers of foreign-grown wheats have at all events some reason to calculate on the payment of moderate, if not of nominal duties on the entry for home consumption of their property; and accordingly, in all the foreign grain markets for exportation, we find that prices continue to be demanded, and in numerous instances to be obtained for wheat, which, at our present quotations for similar qualities, leave nothing for the payment of our future import duties, whatever they may be. These purchases, therefore, are evidently made on the chance of an advance occurring here before the coming crop can be generally brought forward into consumption; and, from the present appearances in the fields, there exist, at all events, some grounds for entertaining the opinion that the value of wheat here must be in some degree enhanced before the conclusion of the present year. From the different shipping ports within the Baltic sea, our advices are dated in due course of post. The supplies in none of these markets were then in any way large, nor was the demand great. At Danzig and Elbing, however, rather considerable shipments of wheat continued to be made, and prices were gradually advancing; indeed, at the latest dates, they were above their relative value, when compared with the prices to be obtained in Mark Lane for wheats of the same description. The Polish merchants continued to found their speculations as much on the reduction of our duties as on the improvement of our prices, and little chance consequently now exists of any decline occurring there during the present season. From Rostock and Stettin the information received since our last publication has not attracted in any particular manner the interest of the public. Large shipments of wheat of all descriptions had already been made, and as a considerable increase of supply was expected to be received in all the Baltic ports previous to the middle of July, it may be considered as a matter of certainty that we shall be amply supplied with Polish, Galician, and Silesian wheats of the best qualities so long as the navigation of the Baltic remains open during this year. From Hamburg and the other grain markets without the Baltic sea, and in the north of Germany, also considerable quantities of wheat have been already forwarded to the United Kingdom, and still larger supplies may be expected; for, except in England, there is no other mart for the consumption of their abundant surplus of agricultural produce. Prices, however, as elsewhere, were higher in proportion than they are in the various markets of consumption within the United Kingdom; and these speculations, therefore, must be attended by a large loss of money, unless our prices very considerably improve. In all the ports in the Adriatic, in the Mediterranean, and in the Black Sea, the wheat trade, by the latest letters, was in a considerable degree of activity, and prices of those qualities suitable for the consumption of Mark Lane, continued gradually, although slowly, to become dearer. In Leghorn, and the lower ports of Italy, a demand for England still existed, and farther shipments were making at prices generally, however, more favourable to the shippers than those paid in the north of Europe. The crops were not looking well, but still the harvest had commenced under favourable circumstances. Should its conclusion be equally so, we shall continue still to receive considerable supplies from these places during the remainder of this year. At Marseilles, the export demand had not in any material degree fallen away, and the demand for home consumption was rather on the increase. Former prices, therefore, were fully supported, and an improvement in them was looked for, because the wheat crop throughout that part of France had suffered more or less by the dry and hot weather, the same as it has done in Great Britain. Indeed, the reports from Italy generally respecting the coming crop are not more favourable than are those from France. Still, however, so long as we are able to pay in specie, so long will our markets continue to be plentifully supplied with wheat of all descriptions from these seas, and our manufacturers generally will find stronger and stronger grounds for regretting that alteration in our corn laws which renders that trade with foreign nations virtually free.

From the United States of North America our information is to the middle of last month, but it varies little in its importance from that which we published in our June number. The liberality of our corn law and tariff was universally applauded there, because it would enhance the agricultural and manufacturing interests of that Union, and injure the internal sources of prosperity throughout the United Kingdom. A barter trade, however, the republican legislature has already repudiated by acts of Congress. The almost prohibitory rates of duties previously charged on the importation of all descriptions of British manufactured goods have latterly been very considerably increased, and certainly the reason of this addition of duty is a most legitimate one. It is imposed for the encouragement of American manufactures at home, which must flourish in proportion to the prosperity of American agricultural pursuits. The means for the production of grain, cattle, and of all descriptions of food there are boundless, and the want of profitable foreign markets for the consumption of their surplus produce has hitherto restricted the progress which otherwise would have been made in agricultural improvements. By the late wisdom displayed by our legislators, these obstructions to American agricultural and commercial improvements have partly been removed, and it is little wonderful therefore that our liberality is the theme of unbounded and universal praise on the other side of the Atlantic. Shipments of flour to a considerable extent continued to be forwarded to Europe; and as the new crop continued to be well thought of, these shipments will most probably shortly be increased. Mr. Webster, when in this country, availed himself of every opportunity to recommend reciprocity in trade. The exchange of food for raiment was his constant cry. This gentleman is at present a minister in his own country, and his acts now contradict his former assertions. He is, however, perfectly correct in his present conduct, for no well regulated society will ever give employment to any one without their circle whilst there exists one within it willing to work, but at the same time destitute and unemployed. In future we may annually now look for considerable supplies of produce from the United States, which do not brighten much the present prospects of the British agricultural interest. The favourable change in the weather may be of service to the farmers in improving the qualities of the coming crops at home; but, as we have already said, we fear much that it cannot now become an abundant one. Prices also may continue probably to be moderate, if not unnaturally low, partly originating in the alteration which has latterly taken place in our corn laws, and partly in that degree of temporary distress now unfortunately too prevalent amongst nearly all classes in the British empire.

In the barley trade nothing of public interest has occurred since the publication of our last number. The supplies every where have been small, but at the same time they have been rather more than the consumption required, and a decline in its price of about 1s. per quarter has been the necessary consequence. This depreciation in the value of this most important article of British agricultural produce is not so great as might naturally have been expected to arise from the late change in the rates of duty, by which the barley growers have till lately been moderately protected against foreign competition in our large markets of home consumption. The state of the weather till the middle of June had created some degree of anxiety, if not of actual alarm, for the safety of the coming barley crop, and in this cause alone originated the very firm manner in which the prices of this article have been maintained since our last review of the state and prospects of the barley trade. The late favourable alteration in the state of the weather has, in some manner, however, removed the fears which previously had existed on this important subject. The rain commenced towards the third week in June, and no doubt it has created a most favourable change already in the appearance of all the barley fields; still, however, it cannot entirely remedy the damage previously done by drought and excessive heat. The crop generally has been by these causes brought unnaturally forward towards ripening, and consequently the straw is weak and stunted, by which no doubt the produce must eventually suffer. The annually diminished quantity of barley now sown renders the safe gathering of the barley crop of more consequence than it would be did our legislators only patronize the extension of its home cultivation. The malt duty, however, places an insuperable bar to this great national benefit. The capital of the United Kingdom is in a gradual state of diminution and decay, occasioned by its remittance in large sums now, we may say annually, to foreign nations in exchange for foreign food. To pay in a metallic currency the interest of the national debt, contracted for in paper money, renders excessive internal taxation absolutely requisite. Little less than one quarter of the public expenditure is placed on manufactured barley, and, as eventually the feather may break the camel's back, so is excessive taxation gradually destroying the property embarked in the production of barley. It is, however, now ordained by Parliament, that John Barleycorn shall not only be taxed beyond endurance, but that he shall also compete, in his own markets of consumption, with the producers of foreign barley, who are not taxed at all. That this system cannot last long must be obvious to every man of common observation. The legitimate consumption of beer is annually becoming less, and this surely is a gross piece of injustice towards the middle and lower orders of society throughout the United Kingdom. The malt duty is far too high for the purposes of revenue themselves. So far from filling the public treasury, it has during the last three years been regularly rendering the sum paid therein less; and, until the rate per quarter be materially reduced, the evils arising from it to the barley grower, to the beer consumer, and to the public revenue, must annually be increased. To fix the minimum duty payable on wheat when entered here for home use at seven shillings per quarter, and on other descriptions of foreign grain in proportion, would frequently place a large sum into the treasury, which might most advantageously be applied to the reduction of the malt-tax, and thus in part at all events might the just claims of the public be satisfied. But to render proper justice to the barley-grower, the malt duty should be reduced to 1s. per bushel; this would in a few years do more than triple the quantity of barley at present consumed by the maltster, and would be a boon of vast importance to the great majority of her Majesty's subjects. It would render the cultivation of little short of two millions of acres of sandy lands, in addition to the quantity already under barley cultivation, necessary, and it would thus increase the wealth of the community, These lands are at the present time useless, but by proper encouragement the produce of them would do much more than pay for the expences of the increased consumption of beer. It is, however, not only by the malt duty, but likewise by that charged in England on home-made spirits, that the public in general suffers. In Ireland and in Scotland the public charge on whisky is moderate, and, consequently, smuggling has within these few years been nearly suppressed. In England, on the contrary, in consequence of extravagant duties charged on home-made spirits, at least one half of the quantity consumed is smuggled into the country, and is of a most deleterious quality; it is ruinous to public morality, and destructive to the health of the lower orders of society. To equalize the duties throughout the three kingdoms, to raise those now charged in Scotland and Ireland to one of 5s. per gallon, and to reduce that in England to the same figure, would, in a material degree, increase the revenue now received from British spirits, would entirely suppress the nefarious commerce of the smuggler, and, by the consumption of wholesome home-made spirits, the public health would be improved. To furnish that quantity of sound spirits at home which the present system draws into England illegally, would require an additional supply of grain to the extent of half a million of quarters; and here again would the nation's wealth be materially increased. Another considerable advantage to the state might also be obtained by a revision of the present restrictions and regulations under which our distillers and rectifiers are placed by the excise. Whisky has already nearly banished the consumption of Geneva, legally imported; and to give due encouragement to the rectifiers of British brandies would, in a few years, produce also similar effects on the consumption of duty-paid foreign brandies. It is perfectly well ascertained that, even the best brandy manufactured in the south of France is done on the worst principles of distillation, and is drawn from the lees of wines and from bad fruits, and, therefore, it cannot even be converted into wholesome spirits. On the whole much may be done in favour of the cultivation of barley at home. The quantity grown, and the comforts of the population may be tripled, and the revenue itself very considerably increased, and not one interest, nor one class in our society, can suffer any injury whatever from our proposed alterations in the barley trade. We are, however, as firmly persuaded, for the present at all events, that to preach moderation to a stormy ocean would be attended with usefulness, as we are that for us, under existing circumstances, to endeavour to impress on the minds of modern legislative theorists the necessity of adhering to those practical principles in commerce which best regulate the manners and customs of mankind, would be immediately effective. The truth, however, must eventually prevail, although we greatly fear that bitter and sad experience will be requisite to the substitution of practical for Utopean doctrines, in the proper and beneficial government of the various complicated and important interests now existing within the British Empire.

Very little animation existed in the oat trade during the month of June. The supplies generally have been of very inferior quality, several cargoes from Ireland having been disposed of at from 12s. to 14s. per quarter. In the early part of last month fears were entertained that the oat crops would suffer in the fields from the want of rain, and from the excessive heat which had previously prevailed, more particularly in Ireland. All doubts on this subject have been however happily removed by the highly favourable change which afterwards occurred in the general state of the weather, and, for the breadth this season under oat cultivation, there is at the present moment a fair prospect of an average crop of this article being reaped in the proper season. Ireland, for several years back, has been a large producer of oats for the British markets, and this part of the United Kingdom has been rapidly progressing in agricultural improvements, originating solely in this favourable channel having heretofore been opened for the consumption of the surplus of the oat crops produced in the sister island, and consequently the people were annually increasing their means for comfortable livelihood, and their condition in life was undergoing a gradual change for the better. Whilst in Great Britain the growth of oats had, to a certain extent, been superseded by that of wheat, Ireland fully supplied the deficiency of this article of home growth in the British markets, and by so doing increased her internal wealth. The people found increased channels for productive labour, and the periodical emigration to the opposite coast of Great Britain in search of a few months' employment was annually becoming less necessary. The value of oats, at the same time, was kept moderate in the British markets, and in fact no complaint could be made either respecting short supplies or high prices of this great article of consumption. The British and Irish growers were fairly protected against foreign competition by the late corn laws, and the consumer was equally protected against even the chance of extravagant prices. Both producer and consumer were perfectly satisfied with the existing state of the oat trade, and desired no change in it. In practice it was, on all hands, admitted to have been excellent, but the pruning-knife of the theorist has now interfered with its prosperity. The production of oats will in future no longer be so profitable to the farmers of Ireland as it has hitherto been, because the north of Europe will supply many of the great markets of consumption in Great Britain with oats, under our present corn law, considerably cheaper than they can be imported from Ireland. Under no circumstances, so long as the existing corn bill remains in force, can Ireland in future compete in cheapness with the north of Europe in the British markets, particularly in those between Leith and Bristol. The best qualities of oats are universally five or six shillings per quarter above our average prices, by which the duty on importation is regulated. This difference in value will pay our import duty under all circumstances, and in the difference of freight alone will a profit be found sufficiently large for the importer of oats from abroad. For a season therefore, at all events, a limit is placed to the progress of agricultural improvement in Ireland; and a total stop to the cultivation of several millions of acres of excellent land on the banks of her rivers, and in other situations now in a perfect state of nature, must arise from the new corn law. The free-traders deal occasionally not a little in contradictions. In the United Kingdom, for instance, they complain of too great a population; and yet by their measures they propose to give employment to foreign agricultural labourers and foreign seamen in supplying the British people with food, in preference to British field-work men, and British seamen. They, in fact, recommend emigration to the colonies to the unemployed subjects of her Majesty, and at the same time they pay cash to foreigners for large supplies of food, and they pay wages to foreign seamen for delivering it into the British ports of general consumption. This system, however, cannot last, because the precious metals cannot for any length of time be found in the country large enough for the payment of foreign provisions. The new corn law then will appear in the unnatural character of an enactment for the advancement of foreign agricultural pursuits, and of foreign manufacturing and commercial operations at the expence of the British public. After our credit, and our money, however, are gone—after our population is reduced to a level with Polish serfs and Russian slaves, then indeed, perhaps, may a barter trade be established amongst nations; but this is no justifiable reason for the efforts now making by the legislature to introduce a state of society so very much beneath that which, for a century at least, the British people have enjoyed. The energy of the people, however, may eventually rise superior to the contemplated consequences of the corn bill, and the threatened misfortunes may thereby be averted. It is a most fortunate circumstance that bread has continued at moderate prices during the last month. The potatoes of last year, also, are still in fair condition for the late period of the season, and their value has continued to be exceedingly moderate during the whole of the year. Those of the new crop are now rather plentiful than otherwise in the London market, and in another week the supply will be abundant. To this most important and valuable article of agricultural produce, the rains have been most favourable and beneficial, and an abundant growth must be the consequence. The cultivators, however, will find hereafter all our markets partly supplied with foreign potatoes; and thus will the tariff of custom-house duties, as passed during the present sessions of parliament, interfere in an unfavourable manner with the best interests of those who have embarked their property in this department of agriculture.

CURRENCY PER IMP. MEASURE.

JUNE 27.

	Per Qr.		Per Qr.
WHEAT, Essex and Kent, red ..	62 68	White	66 69 72
Irish	52 56	Do. ..	51 59 62
Old, red	— —	Do.	— —
RYE, old	34 36	New....	36 38
BARLEY, Grinding 26 29 Malting	30 32	Chevalier	32 33
Irish..................	23 25	Bere .20	21 24
MALT, Suffolk and Norfolk	56 62	Brown..	50 54
Kingston and Ware	56 62	Chevalier	63 —
OATS, Yorksh. & Lincolnsh., feed	23 26	Potato 25	26 27
Youghall and Cork black	19 20	Cork, white	22 23
Dublin	20 21	Westport	22 24
Waterford, white	16 17 20	Black ..	19 20
Newry	23 24		
Galway	15 16 18		
Scotch feed	24 26	Potato..	26 27 28
Clonmel	22 23	Limerick	20 23 24
Londonderry	22 23	Sligo ..20	22 23
BEANS, Tick, new..............	32 34	Old	35 40
PEAS, Grey....................	33 34	Maple..	— 34
White	35 38	Boilers .	37 39

SEED. Rape...... 36*l.* 40*l.* Irish..32*l.* 34*l.* per last.
Linseed, Baltic....48 56 Odessa 60
English Red Clover.... — — per cwt.
White .... —
Mustard, White 15 — brown 15 16 per bush.
Tares, old .... 28 30 new 36 44 per qr.
FLOUR, Town-made 59 — Suffolk 47 — pr sk. of 280 lbs
Stockton and Norfolk, 45 —

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	60 62 64		
Hamburg	54 56		
Rostock	52 54		
BARLEY	20 23		
OATS, Brew....................	21 22	Feed...	18 20
BEANS	24 25		
PEAS..........................	23 27		
FLOUR, American, per brl......	28 30	Baltic ..	29 —

IMPERIAL AVERAGES.

Week ending	Wheat.	Barley.	Oats.	Rye.	Beans.	Peas.
May 13th	59 9	26 3	19 6	31 3	31 9	31 3
20th	60 9	25 11	19 5	32 4	31 7	31 4
27th	61 10	25 11	19 7	33 7	32 1	30 11
June 3d	63 6	26 6	19 7	33 6	32 5	32 5
10th	64 0	26 8	20 6	31 9	33 1	32 7
17th	63 10	26 10	21 6	36 10	33 9	32 6
Aggregate average of the six weeks which regulates the duty	62 3	26 4	20 0	33 3	32 5	31 10
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London ..	10 0	10 0	6 0	9 6	10 6	10 6
Do. on grain from British possessions out of Europe.......	5 0	2 0	3 6	3 0	3 0	3 0

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, June 24th, 1842.	s. d.	AVERAGES from the corresponding Gazette in the last year, Friday, June 25th, 1841.	s. d.
WHEAT	63 10	WHEAT	63 5
BARLEY	26 10	BARLEY	31 6
OATS	21 6	OATS	21 11
RYE	36 10	RYE	35 9
BEANS..............	33 9	BEANS..............	38 7
PEAS	32 6	PEAS	37 11

Account shewing the Quantities of Grain, Meal, and Flour, imported into the United Kingdom, in the month ended the 5th June, 1842; the Quantities upon which Duties have been paid for Home Consumption during the same month, and the Quantities remaining in Warehouse at the close thereof.

Foreign Grain and Flour.	Quantity imported.		Quantity entered for consumption.		Quantity remaining in warehouse.	
	qrs.	bush.	qrs.	bush.	qrs.	bush.
Wheat, from British Possessions	2950	4	5338	5	1184	2
Peas, from do......	....		455	3	2224	0
Indian Corn, do....	....		437	0	....	
Wheat, foreign	267353	5	76546	6	983571	7
Barley, do.........	3628	3	1321	2	73974	2
Oats, do.	8254	1	9776	6	90928	5
Rye, do.	715	2	237	7	3255	0
Peas, do.	7835	2	774	1	33607	0
Beans, do.	7171	1	529	3	60163	5
Indian Corn, do....	6771	5	5958	6	10627	4
Buck Wheat, do. ..	....		....		....	

	Quantity imported.			Quantity entered for consumption.			Quantity remaining in warehouse.		
	cwts.	qrs.	lbs.	cwts.	qrs.	lbs.	cwts.	qrs.	lbs.
Flour and Meal from British Possessions	9180	1	1	56909	1	26	11949	1	5
Flour & Meal, foreign	52045	2	5	28281	3	6	328685	0	25

PRICES OF SEEDS.

JUNE 27.

The transactions in the Seed Market were of little importance, and no change occurred in quotations. There was a sample of *new* Brown Mustard seed shown of good quality, and in fine dry condition, for which 15s. per bush. was demanded.

Linseed, English, sowing 50 55
Baltic .... — — crushing 46 50 per qr.
Mediter. & Odessa 5[illegible] 52
Large, foreign.... — —

Clover, English, red	—	—	white	—	—	per cwt.
Flemish..........	—	—	do..	—	—	nominal.
New Hamburgh ..	—	—	do..	—	—	
Old do.	—	—	do..	—	—	
French	—	—	do..	—	—	
Hempseed, small........	36	41	large ..	46	48	
Coriander..............	10	16	old....	16	18	per cwt.
Mustard, brown, new ..	10	15	white..	9	13	pr. bush.
Trefoil	16	35				
Rapeseed, English new..	40*l.*	48*l.*				
Rye Grass, English......	30	42	Scotch	18	40	
Tares, winter	—	—	New..	4	5	
Canary, new............	75	78	fine	80	88	
Carraway, old	50	52	new	48	49 52	
Linseed Cakes, English..	10*l.* 10s. to 11*l.*					
Do. Foreign..	8*l.* to 8*l.* 10s.					
Rapeseed Cakes........	6*l.* 5s. to 6*l.* 10s.					

PRICES OF HOPS.

BOROUGH, June 27.

The hop market has been less fluctuating since our last, and as the general advices from the plantations are considered more favorable, there is a disposition to back the duty rather higher, and we may therefore call it 130,000*l.* The letters continue contradictory as may be expected, from the different localities and experience of the writers.

WORCESTER, *(Saturday last.)*--The reports today from the hop districts are rather contradictory; some of them stating an increase, but others decidedly less fly since last week. Upon the whole, however, the accounts are unfavourable, although it cannot be denied that the late heavy rains, assisted probably by the voracious *colliers*, have partially cleared the plants, which from all parts are represented to be growing most luxuriantly, and if they were free from blight, would probably go on prosperously, but they are not out of danger so long as they remain in their present foul state. There are a few hops selling, but the market is not brisk. The duty has been backed at 10,000*l.* to-day, which is higher than the estimate of last week.

EAST RETFORD, June 22.—We are sorry to announce that since our last, although the bines have continued to grow and throw out their lateral branches, the fly and filth has continued to increase, and that to an extent altogether unexpected by many and unforeseen. Up to Saturday last the weather had continued dry and hot, though the nights were cool and refreshing, yet the fly and lice continued to multiply, and it was anticipated that a good sharp fall of rain would altogether cleanse the plant, or otherwise considerably mitigate the severity of the infliction under which the bine was suffering. Ultimately rain did come, but at first it was so genial and calm that its effects were scarcely perceptible upon the hop plant. At length the desideratum arrived, and between the hours of two and four in the afternoon of Monday last, we experienced such a shower as we have not done for some years. The rain positively descended in complete torrents, so that in a very few minutes the Market-place was completely under water to the depth of some inches. This storm appears to have extended throughout the entire hop district, and it was hailed as a deliverer of the hop plant from the accumulated loads of filth and fly which infested it. It would appear, however, that it has totally failed in its effect, for on the following (Tuesday) morning, the lice appeared to have increased twenty fold. Many of those leaves upon which not more than from ten to thirty could be found previously, were now completely covered, and thousands occupied the place of fifties. Upon the old leaves, too, where the fly had hitherto refused to take shelter, numbers were to be found, which is an unfailing test that the blight is still progressing. In some of the plantations, likewise, we have discovered signs of vegetable repletion, in the form of what is commonly designated "honey dew," which, if it be not checked speedily, will soon put a finishing stroke to what the fly and lice have so disastrously begun. We have, throughout the present season and up to the present time, expressed our fears of the realization of any thing like a crop being ultimately gathered; and every succeeding visit tends to confirm our apprehensions. Favourable weather will do much—if it comes; but such is the depth of the disease, and the nature of the injuries it has already received, that we think it next to an impossibility the powers of the plant should so far rally as to make it anything like productive during the present season.—*Doncaster Gazette.*

POTATO MARKET.

SOUTHWARK, WATERSIDE, JUNE 27.

The fine growing weather with frequent showers during the past week, has been highly favourable to the production of vegetables. The metropolitan markets received a good supply of new Potatoes on Saturday last from the farmers in the vicinage of the metropolis, and the demand has now become pretty general for them. They were in request at prices varying from 10s. to 14s. per cwt., according to sample. The smaller sort in proportion. The quantity of old Potatoes received in ships at the water-side is as follows, viz.:—From Scotland, 500 tons; South Devons, 440; Jersey, 80; Essex, 75. Total, 1,095 tons. The best samples have maintained good prices, but many of the above have come to market in perishable condition; they will not keep, and must be sold for what they will realize. New Potatoes are now becoming plentiful, consequently the trade at the water-side is nearly terminated. This closes our report for the season.

PRESENT PRICES AS SUBJOINED.

	s.	s.	
York Reds........................	90	to 100	per ton.
Scotch do........................	50	65	
Devons	80	90	
Jersey Blues	—	70	
Kent Kidneys..................	—	70	
Kent, Whites		65	

WOOL MARKETS.

BRITISH.

JUNE 27.

Down Ewes and Wethers........	9½d.
Down Teggs	11d.
Down Wethers	9½d.
Down Hogs	9½d.
Half-bred Hogs	11½d.
Flannel Wool	8½d. to 11½d.
Blanket Wool..................	5d. to 7½d.

LIVERPOOL, June 25.

SCOTCH.—There has been very little doing in laid Highland Wool this week, nor do we expect much will be done now until after the wool fairs in the north that come on about the middle of next month. The above remarks will apply to all other kinds of Scotch wool.

	s.	d.		s.	d.
Laid Highland Wool, per 24 lbs..	7	3	to	7	6
White do. do............	10	9		11	6
Laid Crossed do..unwashed..	8	6		10	0
Do. washed do..............	9	9		11	0
Do. Cheviot unwashed do.	9	0		10	0
Do. washed	11	6		16	0
White Cheviot, washed	18	0		20	0

FOREIGN.

CITY, June 27.—The arrivals of wool last week in the port of London, chiefly from Hobart Town, were large, being altogether 3624 bales. Of this quantity 2586 bales were Van Dieman's Land, 275 from South Australia, 83 from the Cape of Good Hope, 200 from Russia, 401 from Odessa, 70 from Germany, and 9 from Belgium.

The brokers and others in the trade having had time to review their catalogues, and institute comparisons as to the result of the recent sales, we are glad to find that the opinions expressed are quite as favourable as those to which we gave expression in our previous reports, and during their continuance.

Printed by Joseph Rogerson, 24, Norfolk-street, Strand,
London.

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THE FARMER'S MAGAZINE.

AUGUST, 1842.

No. 2.—Vol. VI.] [Second Series.

PLATE I.

PORTRAIT OF ROBERT BAKEWELL, ESQ.

PLATE II.

The subject of our second Plate is a Cart Stallion, the property of Mr. Isaac Brice, of Risby, Lincolnshire, to which the first Prize of £5 was awarded at the meeting of the North Lincolnshire Agricultural Society, held at Brigg, on the 6th August, 1841.

A BRIEF SKETCH OF

ROBERT BAKEWELL, ESQ.

Memoirs of *utilitarians* are very seldom written. The quiet tenor of their lives, unlike the glare of that which sheds a halo around the heads of the warrior and the statesman, affords but little field for the display of the talent of the biographer: hence it is that the real benefactors of mankind are but too frequently passed over in silence, and we walk over the green sward that flourishes where the remains of those whose energies were devoted to the improvement of the race of animals, that contribute largely to add to the creature comforts of man, moulder into primitive dust, without even thinking that we tread on hallowed soil; for the earth beneath which a good man rests, is hallowed by the remembrance of his virtues and his usefulness.

Mr. Bakewell, who was the pride of the agriculturists of the last century, and justly celebrated for his improvements in the breeding of long-horned cattle and sheep, has been strangely neglected by those who ought to have been his warmest and most grateful advocates. But such is the way of the world: neglect, almost universally, is the reward of merit; and it is but too frequently the case that an *usurper* gains the prize, while the *real utilitarian* is thrown into the background of the picture. It is our wish to pay due honour to the memory of Mr. Bakewell, and, scanty as our materials are, we will endeavour to add one more laurel to the wreath which so justly encircled his brows; for

"He lived and died beloved, and deeply mourned" by a circle of friends who now, like him, are "food for worms."

The man who is the benefactor of the human race has a right to expect to live in the memories of posterity. Mr. Bakewell will do so; and although this tribute to his memory comes somewhat late, it will, at least, be appreciated as an offering at the shrine of honest merit.

Robert Bakewell was first introduced into this sublunary world at Dishley Grange, near Loughborough, in Leicestershire, in 1726. The farm of Dishley Grange had long been in the possession of his ancestors, and those from whom he more immediately descended held the property on a lease of ninety-nine years from the family of Phillipps, of Garrendon; it having been purchased in 1693 by a Sir Ambrose Phillipps, by whom it was leased to the forefathers of Mr. Bakewell. The term of the lease expired very shortly before Mr. Bakewell's decease; and the farm, which consists of about 457 acres, then came into the occupation of his nephew, Mr. Honeybourne, who resided upon it until he died, which was about twenty years after the demise of his uncle. But with Mr. Bakewell, Dishley lost all its importance, and his successor failed in becoming even a shadow of the great practical man who had been its previous proprietor.

The Bakewell family would appear to have been long settled at Dishley, as in the chancel of Dishley Chapel, where the remains of this celebrated man lie interred, are deposited the bodies of his father, Robert Bakewell, who died in 1773, in the 88th year of his age; and also that of another Robert Bakewell, probably his grandfather, who died in 1716, at the age of 73. Mr. Bakewell himself ended his valuable life on the 1st of October, 1795, at the age of 69—too early for "his country's good."

Perhaps, during the last century, no man did so much towards increasing the agricultural interests of the country as Mr. Bakewell. He was unwearied in his exertions, and enthusiastic in bringing to perfection his favourite pursuits. In every branch of the science he was persevering to the end; and by strenuous exertions made himself master of the different modes of cultivation pursued not only by the English farmers, but also those of Foreign cultivators. He did not content himself with the mere knowledge which he had thus laboriously and industriously obtained, but he introduced that system into his own farming practice which is now generally pursued in Leicestershire.* But the great glory which is attached to the name of Robert Bakewell is in the vast improvements which he made in the breed of cattle. The different nations of Europe supplied him with the *materiel*, and Nature herself might have wondered at the skill which he displayed in bringing her works to a greater degree of perfection. It was from Flanders that he principally procured his famous breed of black cart-horses, now nearly, if not quite extinct, which have been thus described. They were lighter-legged and flatter-boned than those now in use, but of great strength, more especially in their fore-quarters, with erect heads and fine crests. One of this breed was of such excessive beauty of proportions, that he was likened to the fancied war-horse of the German painters. He must indeed have been a splendid and picturesque animal, for a man of moderate height seemed to shrink under his fore-end, which rose so perfectly upright, that his ears stood, (a qualification that Mr. Bakewell deemed indispensible to the beauty of a horse,) perpendicularly over his fore-feet. This animal was the entire horse which Mr. Bakewell christened K,† and which was perhaps one of the most elegant creatures of his class that was ever bred within the British dominions.

Mr. Bakewell was allowed to be the first breeder of horses of the age in which he flourished; and King George the Third, who claims the honourable distinction of adding to his regal titles that of being THE FARMER'S FRIEND, particularly distinguished him by his notice and approbation. This conferred honour both on the Monarch and the subject, for it is unfortunately now too much the fashion to neglect the agricultural interests of the country. A horse which Mr. Bakewell submitted to the inspection of his Sovereign, and which was afterwards publicly shown for some months in London, was "the meanest of the breed;" yet its symmetry was beautiful, and its form not deficient in utility; it was, in fact, a picturable animal.

Mr. Bakewell had too much good sense to keep useless stock; he made even his mares work in the team, but they were treated as gently as a man would treat his wife, and the use of the whip was entirely prohibited at Dishley.* It is somewhat unfortunate that this fine breed should have been superseded by a heavy-legged race, whose movements are snail-paced, and decidedly inferior for agricultural purposes. Is there no one among our friends who would devote his attention to this important subject?

The pride of Mr. Bakewell was to improve the class of domestic animals, and his celebrity as a breeder of long-horned cattle will ever shed a halo over his name. It appears he selected the finest individuals of the Warwickshire species, principally from the herds of Mr. Webster, near Coventry, and Mr. Fowler, of Rolwright, which, being crossed with the most excellent of the Lancashire breed, produced a stock of cattle that was held in the highest estimation for a considerable time; but fashion varies, even with respect to animals, though the Dishley breed was kept up for some years after the death of Mr. Bakewell, by Mr. Paget, of Ibstock, Mr. Astley, of Addeston, and to a more recent period, by Mr. Huskisson, of South Croxton; though when a sale of the latter gentleman's stock took place, about thirty years after that of Mr. Paget's, there was a great depreciation in the intrinsic value of the cattle, although they were allowed to be some of the best and purest specimens of the Dishley herd. We cannot give a better proof of the value that was attached to this breed than to attach the prices a few of the lots fetched at the first day's sale of Mr. Paget's stock on the 14th of November, 1793:—

		Guineas.
Lot 8.	Short-tail, by Shakspeare	38
9.	Eyebright, by a bull bred by Mr. Varnam	51
14.	Strawberry, by a Dishley bull	31
16.	Brindled Eyebright	33
26.	Penn	35
29.	Young Dandy	30
30.	Brindled Finch-Tidy	29

At this sale the famous bull, Shakspeare, which was bred by Mr. Fowler, by Shakspeare, *peré*, out of Young Nell, fetched 400 guineas, to which the seller appended the condition that he should have the privilege of having the use of him for two cows yearly. The heifers by this animal also sold well, one two-years old, realising 84 guineas, and another, one year older, 70 guineas. Mr. Bakewell preferred rearing small-boned cattle, and considered them to be in every way the most profitable, both to the farmer and the consumer. He also strongly recommended great attention being paid to the quality of the cows intended for breeders, and justly remarked that, when a sound discretion was not used, the produce often failed, and then the bull was frequently unjustly blamed. He was exceedingly particular in his own selections, and he prized his favourite bull, called Twopenny, so highly, that he refused 200*l.* for him; and he appears to have been somewhat choice of his produce, for he rarely sold any of them, though he let them at high prices for the season.*

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* In Mr. Nichols's valuable work, "The History of Leicestershire," honourable mention is made of Mr. Bakewell. We are there told, at the time that work was compiled, that "he worked the drill and horse-hoe as they are now used; and the identical implement with which he drilled his grain and his turnips, was then used in the neighbourhood, and by the same person who worked it upon Mr. Bakewell's farm in his life-time."

† Of this breed Mr. Bakewell used frequently to let out his entire horses for the season, for the sum of 150 guineas each.

* These mares were valued, about the year 1785, at 30*l.*, 40*l.*, and 50*l.* each. The famous Corinthian Bulls, which are described as being wonderfully beautiful, and symmetrical in their proportions, are made to do all the heavy work on the rich land that is termed the *Terra Firma* of Italy. Their colour is described as being, generally, a bluish roan; horns long, tapering off to a point, white as polished ivory, and finished with a bright black tip at the end.

Celebrated and excellent as Mr. Bakewell's breeds of horses and cattle were, still more so was his breed of sheep. Perhaps at no period of time, certainly not in his, was such an improvement made in this valuable animal. In the present day cultivators of flowers are continually producing new species, but Mr. Bakewell was before-hand with them, for he may truly be said to have been the producer of a new variety of sheep. Combined efforts frequently produce great improvements; for practical men, by condensing their energies into one focus, may bring forward important results. But Mr. Bakewell's was a master-mind; his own skill and genius overcame obstacles that to others appeared to be insurmountable; and his long-woolled sheep became the pride of Leicestershire. It was entirely his own work, and the time he took to complete his wonderful improvement was incredibly short. In our day the southdowns have been brought to the highest state of perfection by Ellman, Grantham, Webb, the Duke of Richmond, and others, the superiority of whose flocks do honour to the agricultural interests of the country; but they were brought to this state of perfection by the union of several parties: Mr. Bakewell stood alone, and to him we are solely indebted for that beautiful and useful animal, the new Leicester sheep.

It was not on a sudden that Mr. Bakewell attained his high celebrity as a sheep-breeder. It is recorded of him that the first ram he let out he drove himself to Leicester fair, and obtained only 16s. for the use of him for the season. About 1760 his rams did not sell for more than from two to three guineas each, and after this time he did not receive for their hire more than from 15s. to a guinea per head. He now gradually advanced his terms, and in 1770 he let some of them for 25 guineas. Mr. Bakewell used to tell an anecdote respecting the difference of judgment in respect to the value of cattle. He was once attending Loughborough Tup-market, where he had a ram which he had let for 25 guineas. Soon after the agreement was concluded, another farmer offered to purchase the animal, and Mr. Bakewell jestingly fixed the price at 25s. The farmer considered this too much, and offered 18s., and eventually they parted for 2s. This was something on a par with the judgment of some Leicestershire farmers respecting a heifer which had been purchased for 80 guineas, and which they, a few days after, priced at 8*l*. This may be considered as the first dawning of his fame and fortune. The reputation and prices of his stock so rapidly increased, that in a very short time 400 guineas was given for the use of a ram for the season. One, called the Two-pounder, produced him in one season 800 guineas, besides the produce of his own ewes that were put to him, so it may be fairly calculated that the profits of the produce averaged him 1,200 guineas for one season.

The ardent mind of Mr. Bakewell was first brought into action about the middle of the last century, and from that time we may date the improvement of the Leicester sheep. About that period he engaged John Breedon for his head shepherd, and it appears that he soon became his confidant. There is little doubt that he entered actively into his master's plans, for he had the entire control over the formation of the new breed, under the direction of Mr. Bakewell, but they kept the manner in which it was accomplished a profound secret.* This seems somewhat strange, as Mr. Bakewell was a liberal-minded man, and in after years the knowledge of his process might have been of essential service to his country. But his whole mind was devoted to the science in which he had engaged, and whilst he was practically working out his plans, it is probable that if any of his schemes proved failures, he wished them to be kept as secret as possible. In this he acted wisely, for too frequently the observations of "good-natured friends" tend to damp the spirit, and check the energies of a man who risks his reputation on the success of his experiments. Hence it is that we are so little acquainted with the crosses he used to form his beautiful flock. Conjectures have been various: some have considered that the principal crosses he made were between the old long-woolled Leicesters, and the ill-formed animal that in those days fed upon the grassy hills of Charwood forest; but, after all, conjecture is not proof. It may be taken as a fact denying dispute, that all his crosses were made from the best individuals of the different flocks, and these he, in all probability, crossed again with some of another breed. His great object was to gain the greatest weight of meat upon the smallest quantity of bone, and to combine this with symmetry of form, early maturity, fine quality of flesh, and a propensity to fatten. Some breeders consider the size of the animal to be too small, but Mr. Bakewell's opinion was, that a greater quantity of mutton would be procured from a given quantity of acres, grazed by a larger number of small sheep, than from a smaller quantity of larger animals possessing less appetite.

Arthur Young, who is no mean authority, informs us that Mr. Bakewell was very curious in the breed of his sheep, and he considered both his rams and his ewes to be perfect specimens. He describes their appearance thus:—"Their bodies are as true barrels as could be seen—round, broad backs, and the legs not above six inches long; and a most unusual proof of kindly fattening is their feeling quite fat just within their forelegs on the ribs—a point in which sheep are never examined in common, from common breeds never carrying any fat there. In his breed of sheep he proceeds exactly on the same principle as with oxen—the fattening in the valuable parts of the body, and the living on much poorer food than other sorts. He has found from various experience in many parts of the kingdom, as well as upon his own farm, that no land is too bad for a *good* breed of cattle, and particularly sheep. It may not be proper for large stock, that is, large-boned stock, but undoubtedly more proper for a valuable well-made sheep, than the usual wretched sorts found in most parts of England on poor soils, such as the moor sheep, the Welch ones, and the Norfolks; and he would hazard a moderate stake that his own breed, each sheep of which is worth several of those poor sorts, would do better on those poor soils than the stock generally found on them; a good and true shape having been found the strongest indication of hardiness."

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* Mr. Bakewell had, at Dishley Farm, several carcases of the different breeds preserved whole in pickle, which distinctly shewed the thickness of the flesh and fat, and also the smallness of the offal. He had likewise skeletons, with distinct portions of the bones, heads, ribs, &c., of the animals.

* Probably the invariable custom of Mr. Bakewell not to engage his servants for a term of less than four years, might have contributed to prevent the secrets of his system being known. The well-used servant naturally becomes attached to his master, and the honest one will never betray the confidence that has been reposed in him.

According to Mr. Young, the breed of the sheep was originally Lincolnshire, which was wonderfully improved by Mr. Bakewell; and another person, who visited Dishley in 1790, informs us that he was likely to make by his tups that season fully to the amount of 3,000 guineas. But, notwithstanding the large amount of money that Mr. Bakewell was in the habit of receiving from the proceeds of his stock, at the very noontide of his fame he became involved in great pecuniary difficulties, which would not appear to have been brought on entirely by the expences he bestowed on the necessary experiments for perfecting the improvements of his flock, but from the large number of visitors that congregated together at Dishley. Several of the principal of our nobility were frequently his guests, and Mr. Bakewell, whose disposition was as liberal as his mind was noble, entertained them in the same expensive style as they were accustomed to live in themselves when at home. This, of course, increased the expences of his establishment enormously, and the host of Dishley Grange might truly have told some of his guests, as the late Lady Rendlesham once remarked to the last Duke of York, when he took his leave, that Rendlesham House was considered to be the best inn on the road. It was also an unfavourable period for making money by the cultivation of land: the war with America had considerably reduced the value of produce, and the article of wool, which was of the utmost importance to him, was so greatly depreciated, that it was sold as low as nine shillings per tod. All other articles being also proportionably reduced, his expences great, and his hospitality unlimited, it cannot be wondered at his finding himself in difficulties. But even then Bakewell kept up his high position, for when his stock was valued (the unexpired term of his lease being included in the valuation), there was a balance in his favour of from 1,500*l.* to 2,000*l.* From documents that may be considered of the highest authenticity—the valuations that were placed in the hands of his trustees at that time—we will make an extract to show the prices at which a portion of his sheep were estimated:—

			£	s.
Willow piece....	26	Ewes and lambs....	81	18
Top piece	19	,, ,, ...	99	15
Balk piece......	6	Shear-hog rams	42	10
Marl piece	6	Ewes and lambs....	31	10
Thorpe close	26	Theaves	109	4
Mill leys........	10	Shear-hog rams	200	0
Mill close	10	,, ,, ...	260	0
Cow close	3	Rams	50	0
,, ...	3	,, ...	300	0

From the same document we find the sums that some of his long-horned beasts were valued at, were, in the

	£
Mill close, one red cow and cow-calf........	35
,, one cow and bull-calf............	50
,, one cow and cow-calf............	40
,, one two-year-old bull............	70
Land piece, one red cow and calf	£40
,, one cow and calf	60
Brook piece, one cow and calf..............	35
,, one cow and calf..............	30
,, one cow	30
,, one cow and cow-calf..........	30
Cow close, one bull	20
Barn, four bulls..........................	105
,, three cows	150
,, three cows	60*

As a practical farmer Mr. Bakewell attained great celebrity. He was in advance of the age, and we may say full half a century before any of his neighbours. It may be questioned if the land in Leicestershire is even now so well cultivated as Dishley farm was when its possessor died. He adopted the system of irrigation, and turned a small rivulet that flowed along a portion of his farm to such good account, that from it he contrived to water from 60 to 80 acres of meadow-land every season. He turned this little brook also to other useful purposes, making it to feed a mill, and save the trouble and expence of carting his turnips, which, being thrown into the stream, were allowed to float down with the current to the barn end, where their further progress was impeded by a grating at the bottom of a reservoir, from which they were taken out and laid up, clean and freight free, for the winters' supply. The idea was beautifully simple, and eminently useful, but Mr. Bakewell possessed a mind that was continnually devoted to the improvement of rural affairs. He pursued the drill system of Tull, never sowing broadcast: both grain and turnips he always sowed by the drill, and kept the ground clean by the horse-hoe. There was a striking contrast also in his system of ploughing and that of his neighbours. Some of them employed from four to seven horses at the plough on a sandy loam soil, and then did not turn up much more than half an acre per day. Mr. Bakewell invariably confined himself to a pair, and stirred up an acre with ease, thus quadrupling the quantity of work done with an equal proportion of strength. Dishley, in fact, was a school of practical agricultural reform, and it appears rather wonderful that the system was not generally adopted by the Leicestershire farmers. It is not now unusual in that county to see a string of four or five horses attached to the plough. For a long time the drill system also met with considerable opposition, but within some few years it has been looked upon in a more favourable light. Cultivators naturally look to the amount of profits that are likely to arise from the practice of any separate system; that of Mr. Bakewell did not place him among the wealthy, but had he been less liberal in his ideas, less given to hospitality, less visited by the patrician portion of the community, who entailed enormous expences upon him, he must have lived and died a rich man, whether it was his desire to do so or not. It does not follow that a system must be erroneous because it does not at once open a mine of gold to fill the pockets of the inventor. Every system must have time to work, and every effort at improvement deserves, and ought to receive, the strictest attention. A practical agriculturist is of far more value to a nation than even a practical manufacturer, for the benefits the one confers upon the human race are lasting—the other but transient; yet both deserve to be honoured by their country.

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* Old Comely, the parent mother of all the above stock of cattle, lived to the age of 26 years. When killed, the fat on her sirloin was four inches in thickness.

Dishley Grange was not exactly what a fashionable auctioneer would term " one of Nature's most favoured spots," but under the care of Mr. Bakewell, it became more noted for its usefulness than its beauty. Clumps of willows were planted for ornament and shelter, which were carefully cut every seven years, and the wood thus supplied was brought into use to make handles for rakes, and other purposes of husbandry, manifestly causing a great saving of expense. Even the peelings of the willows were not thrown away, but by the direction of the master hand, were applied to make the bottoms of the sacks. Swampy as the grounds adjoining the house were, Mr. Bakewell contrived to make even their barrenness available.

The gardens were cultivated rather for utility than for shew; the fish ponds were always kept well stored, and even the drainings from the yard were conveyed to the brook, and thus, mixed with the water, used for the purpose of at once irrigating and manuring certain fields belonging to the farm.

It ought to have been remarked that the liberality and high-mindedness of Mr. Bakewell never evinced itself more fully than in his incessant application to the improvement of the Dishley estate. He was but a tenant, but he yearly increased the value of the land he rented for the benefit of the landlord. He stood forth as a model for all practical farmers to study; an example for all honest tenants to follow. He was indeed a man of rare merit, and it would perhaps be difficult to find his fellow. But, like almost all men who have benefitted and enriched their country, and increased ten-fold the wisdom of posterity, by the most important discoveries in arts, sciences, and agriculture; Bakewell has been allowed to rest without even a monument to his memory. He devoted his energies to the good of the public; his own immediate interests he disregarded, without once thinking that future ages would have cause to pay the greatest veneration to his memory. He may be said to have been the first agricultural patriot, for the man who endeavours by incessant exertions to improve the animal creation, is fully as deserving of that distinctive appellation, as is the statesman whose exertions are employed for the perpetuation of the rights and privileges of his fellow countrymen.

We are proud of being able to pay this slight tribute of respect to the memory of a great and amiable man, who by his genius has created and scattered over the green hills, and verdant meadows of his native land, an animal whose beauty and usefulness will ever be a living monument to record his name. To him the English agriculturists owe an imperishable debt of gratitude, and we will conclude with a quotation from Arthur Young, who says, " Let me exhort the farmers of this kingdom to take Mr. Bakewell as a pattern in many points of great importance; they will find their account in it, and the kingdom in general be benefited not a little."

It may not be uninteresting to the reader to give a few particulars of the prices which some of the Ewes of the Dishley breed fetched, belonging to Mr. Paget, when sold by public auction on the 16th of November, 1793.

Lot.	Ewes.	Gs. each.	Amount.	Bought by
2	5	20	100	Mr. Stubbings.
3	5	22	110	Mr. S. Stone.
4	5	20	100	Mr. Tomalin.
5	5	30	150	Mr. Breedon.
6	5	62	310	Mr. Buckley.
7	5	29	145	Mr. Bennett.
9	5	22	110	Mr. Boyer.
11	5	25	125	Mr. Bennett.
12	5	16	80	Mr. Powrise.
14	5	20	100	Mr. Freyer.
15	5	20	100	Mr. Deverell.
16	5	18	90	Mr. Wingfield.
17	5	30	150	Mr. S. Stone.
18	5	20	100	Mr. Martin.
20	5	20	100	Lord Egremont.
23	5	16	80	Lord Egremont.
37	5	45	225	Mr. Pelkinton.
*38	5	52	260	Mr. Pelkinton.
*39	5	16	80	Lord Harborough
*40	5	17	85	Mr. Meland.

Independently of the lots we have just quoted, 30 ewes were purchased by private contract, at 20 guineas each, by Mr. Simpson, before the sale.

LECTURE BY MR. SMITH, OF DEANSTON, ON DRAINAGE:

DELIVERED BEFORE THE MEMBERS OF THE ROYAL AGRICULTURAL SOCIETY, IN THE THEATRE OF THE PHILOSOPHICAL INSTITUTION, BRISTOL, WEDNESDAY, JULY 13, 1842.

After apologising for the alteration of the time of lecturing, Mr. Smith proceeded :—

I need not, before such an audience, say that to the agriculturist the dryness of land is of great importance—that, in fact, the dry condition of the soil is the foundation of all good husbandry. It is beneficial, in the first place, to the working of the soil; it is beneficial also to the after-growth of the plants, and there is scarcely any labour connected with agriculture which is not facilitated by the dryness of the soil. If we look on the face of nature we may gather instruction on this subject; for if we find a tree stronger than his neighbour, we shall find that there the soil is deep and in a dry condition. If we see a stronger and darker-coloured herbage growing on the hill side, there the soil will again be found deep, and in a dry condition. There is not one of the various soils on the surface of the United Kingdom which will not be much improved by being placed in a dry condition, if they are not so by nature. I would say that even on a subsoil of gravel or sand the introduction of the thorough drain system would be beneficial; but as there is only a small portion of that sort of soil in this country, the greater part being super-imposed upon a wet soil, it becomes of the very first importance to the progress of improvement in agriculture that means be taken to render the condition of the soil dry. Many attempts have been made with that view, but they have generally failed, in consequence of not having been done on a proper principle. The first system introduced into this country, was to excavate deep drains, for the purpose of catching the water that

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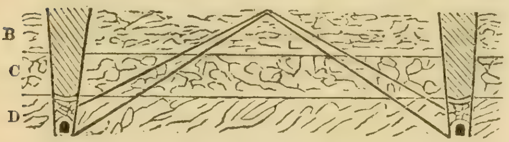
* The lots marked thus * were theaves.

rose from below in the form of spring water. These were, to a certain extent, effectual, and no doubt removed a great deal of the difficulty which agriculturists had to contend with, on land partially wet and partially dry; but until the introduction of the thorough drain system, there was not the power of draining land, on whatever subsoil resting, and rendering it thoroughly and completely dry. The purpose of this lecture is to illustrate, first, the principle on which this system acts; then, to show the advantages which would arise to the agriculturist in carrying on the different processes with respect to the various crops; and then to explain the modes employed to render this drainage effective, both as to the cutting of them, and to the preservation of the openings made for the escape of the water.

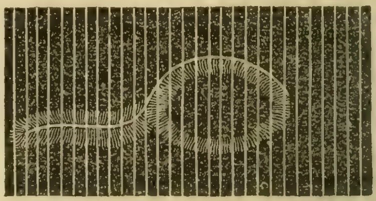
I shall first endeavour to illustrate by a diagram, the mode in which this system of drainage operates.



A represents the atmosphere, B the active soil, and C the subsoil stirred by the plough; D represents the part of the subsoil above the level of the drain. When the ground has been so drained, the first effect that takes place is the drying of the subsoil, which begins generally at the drain, however close and dense it may have been; it begins to crack there by the water giving way. These cracks are continued till they pervade more or less; and in the course of a few months, or perhaps a couple of years, they may have obtained complete effect; the whole of the soil has become dry. The soil which has been worked before on the surface of the subsoil, is in an open state from its former working; the rain falls on the earth, and is received into the intervening spaces, the chambers all receiving so much rain, and the different parts of the soil absorbing a quantity of rain. But while the rain is falling, the drains are carrying off the water from the whole mass. Of course when the rain ceases to fall, this water goes off more rapidly. At first it will be brim-full (if I may use the expression) of water; it is constantly running off, and the water gradually subsides.

The usual practice is to make the drain two feet deep, but I prefer two feet six inches, for this reason, that it is of the greatest importance that the whole should flow off as rapidly as possible. Persons are apt to suppose that the water will not find its way to a drain at a great depth, but that is in some measure a great mistake. When there is more water to pass through, there is more retardation to the passing of the soil; but, notwithstanding, by giving the drain the inclination which I propose, you have the water carried off much faster. There is also this advantage—that when there has been a long season of dry weather, the whole of the bench becomes completely dry; and in that case it takes much rain to wet it, and if the rain is not very abundant, perhaps the water will not stand higher than B. When water falls upon the soil, there is one very great advantage in having a large bench besides. There is a quantity of air which fills all the vacuities in the soils—the active soil itself, the stirred subsoil, and the subsoil which has been laid dry. When the water has drained off, air takes its place, and the action of the air is very beneficial on the whole of the soil moved, particularly the active soil; and just in proportion as you have a great area to receive the water, and to receive air as the water is drawn off, so in proportion you have a tide of atmospheric air passing through the belt of active soil, which is found very much to improve it. We know this soil is very much improved by exposure to the atmosphere; but if it improves in a greater degree by exposure to the sun and light, it is still importantly improved by the passage of the air to the lower strata when the water is withdrawn.

In order to render a field completely dry, it is necessary that a great number of drains should be placed in it; and the position in which they should be arranged will be obvious from this diagram, which represents a field sloping down, with a rising ground in the centre, and rising ground towards the side.



This is made for the purpose of illustrating the mode of laying off drains, and the mode of catching the water when any hollows intervene. In laying off the drains, you will drain the field more effectually by laying them off in parallel lines, than by doing it in any other form; because, if you depart from the parallel lines, you get into corners, and into some spaces not so near the drain, and others too far from it. But in laying it off in the manner shown in the diagram, you get a complete effect on the whole surface. When drains are laid off to run in the direction down the slope, they have a much greater effect in draining than when laid across the field. It is rather difficult to induce persons to believe this, but it is the fact. If carried across the field, though they may catch the water, yet having less declination it will remain longer at the bottom of the drains. Another objection is, that the water which is there retained, has a certain tendency to sink away to the sides of the drain, and therefore will probably come up some distance below the drain. But if the drains are carried in the direction pointed out, you cut the drain so that the water constantly sinks into it; and though it may fall a little into the slope of the hill, yet the greater part of it goes to the drain.

With regard to the distance at which the drain should be placed, that will depend on the nature of the soil. If the field has been subsoiled, it is of less importance; because the plough will form artificial channels in the soil below. If it is a stiff soil, it will keep long upon the surface; and the more free the soil is, the greater tendency it has to allow the water to pass: so that you will find that, on a stiff soil, such as the stiffer clays, taking into account the nature of the subsoil and the soil itself, about the same drain will serve on all soils. The distances in use are generally from 15 to 20 feet: in some soils individuals have been induced to put in the drains at 12 feet; but I conceive that that is, in some degree, throwing away money. From observations which I have made myself on all sorts of soil, in different parts of the country, I am inclined to recommend about 16 to 20 feet as the distance from one drain to the other.

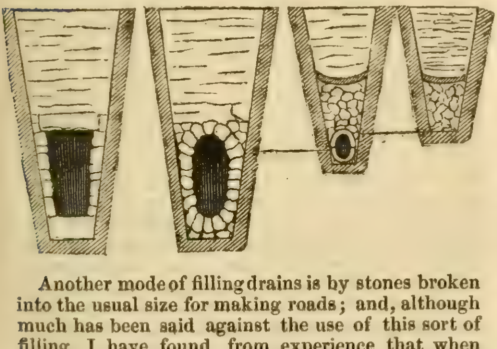
The way in which I usually proceed in draining is, first, to find a good bottom-level to run the drain into. And here I may remark, that in some parts of the country there is sometimes difficulty in getting an open level to carry off the whole water of the district; but I think that by a proper application of the principles of engineering it may be accomplished in most situations; because it is found that if proper channels are executed, a larger quantity of water will be discharged with a very small fall. In an instance in which I was engaged in the endeavour to carry off water, I found that in a drop of four inches in a mile, thirty feet wide and six feet deep, I could discharge 300 tons of water per minute; which is much more than would fall in a very extensive district indeed. So that I have no doubt, if means be taken to carry off the main level, that a fall may be had.

With regard to the fall of the great main, the receiving drain, I should make that drain if possible about four feet deep—three feet six inches will do; but in order to have a drop from the one drain into the other, I usually make the main drain four feet deep, the receiving drain three feet deep, and the parallel drains two feet six inches. When there is any rise in the ground, or any hollows over which the water cannot very well flow, it is necessary to make a cad's drain. That should be made about six inches deeper than the other drains which fall into it; then running on, it discharges itself into the main drain.

With regard to the manner of executing the drains, there are various modes recommended, and I have found, on looking to land which has been drained a great many years, that where the draining has been performed carefully, all the different modes employed for the purpose of keeping the drains open have been quite effective. Indeed, a great deal of the want of effect in the duration of drains has been owing to the bad execution. In some instances fagots have been introduced for the purpose of preserving the openings of the drain, and these have been found to continue and to preserve the openings in a perfect state for nine years —in some instances I have ascertained for twenty years.

In Scotland the peat-top is frequently used to form the tiles for drains. It does pretty well in clays which are pretty stiff, but does not do so well in softer soils; in the same way, in some of the sandy soils, the sides not being sufficient to resist the pressure of the top, the tile gradually sinks down and closes up the drain.

[*Sections of the several drains referred to.*]



Another mode of filling drains is by stones broken into the usual size for making roads; and, although much has been said against the use of this sort of filling, I have found from experience that when properly executed the work is as durable as can be required. In most instances where stones can be had, and where tiles are expensive, I should very much prefer it to the tiles: and there is this advantage connected with it, that it prevents any vermin from travelling in the openings of the drain, such as rats and mice, which do a great deal of mischief. The great point is, to be very careful in covering over at the tops. As soon as wet comes the sand and other materials silts down into the stones, and they are completely choked up. I have found that drains carefully executed were completely destroyed in the course of a couple of years. On the contrary, if drains are so packed that the water falls down on both sides, the parts over-lapping each other, there is no opening whatever for the sand to find its way down. If drains are carefully cleared in this manner, I will warrant their duration for almost any period of time. I have executed myself about 130 miles of drain in this way, and have had them all filled with stones; many of them have been done 15 years, and there has not been a single instance of failure.

A gentleman in the theatre inquired the nature of the soil in the case alluded to.

Mr. Smith replied, both on a gravel and a clay soil. Many persons who have visited my farm have asked whether or not the drains would be choked up in particular positions. I have always asked them what positions they referred to, and have opened it up that they may see; and in no instance have I found a single drain choked up. I have the drains of 100 acres all discharged into one pond, provided for the purpose of seeing how much deposit came from the drain; and although we have had heavy rain, I have never seen the water in the pond tinged as if there was much soil in it. I can, therefore, safely recommend stones as a very sufficient drainage; and in many parts of the country it is much cheaper than tiles.

The next filling which has been used for preserving the opening of drains is the drain-tile. These are usually made of clay, and burnt. They are found to be very handy and very useful; and where stones are not to be had they are to be preferred. But there are districts where the clay-tile cannot be procured at any reasonable price: they are usually 30s. a thousand, but in some districts they are not to be had at all. Lord James Hay has recently discovered a method of making them of concrete stones cemented by lime; and so far as I have made any calculation of the expense, I think that in most instances they will come considerably cheaper than the brick-tile, and, if executed on the ground, where they will not have to be carried far, the breakage will be found to be very little, and they will be found to be exceedingly durable. We know that the cement made of lime is more lasting when covered up than if exposed to the atmosphere: instances of this may be found in the lime frequently discovered in old buildings, which has been found to be perfect after hundreds of years.

There are two other modes of making drains—peat-earth has been cut into a shape somewhat like a hollow wedge; and a sort of instrument has been made for the purpose of cutting peat-earth into the form of the tile, so as to produce an opening not liable to the objection of the wedge, which frequently sinks and pulls up the opening. A stone is frequently used to lay the concrete tile upon, and prevent its sinking. It is also made of concrete.

Much has been said with regard to the application of this system to different soils; and many persons have expressed the opinion that, in some of the very stiff clays, drains of this sort would not be efficacious, and that the application of the subsoil plough after the draining would have no good effect. With the view of showing the beneficial results, both of draining and subsoiling, I have brought some specimens of different clays, in order to show what improvement can be made. Here is a piece from the Pass of Stirling. This kind of soil has been cultivated from a subsoil, and has been known to produce excellent crops of Swedish turnips. Here is another very hard clay from Yorkshire.

A gentleman enquired how long after the subsoiling the land assumed a different character.

Mr. Smith—almost immediately—in the very first year. It requires some years before it becomes adapted for a turnip soil. I have a specimen of some soil which twenty years ago was so extremely stiff from the alluvial deposit in the Pass of Stirling, that it required to be broken with large mallets, to reduce, mechanically, the great lumps of soil. Thorough draining or subsoiling was never thought of till about twenty years ago, when this land was first drained; and now they get from it very splendid crops of turnips, and in almost any season. Here is a piece of the improved subsoil before having been drained by the subsoiling, the same as the other. While we are on this point, I will produce the two specimens of subsoil from my own farm.

A gentleman wished to be informed of the nature of the soil in Mr. Smith's farm.

Mr. Smith—It varies. In some parts it is sandy clay, and in others, clay perfectly impervious to water. When I first began to subsoil there was not more than three or four inches of active soil, properly so called, for growing plants: after a labour of about fifteen years I have now an active soil of sixteen inches, and can turn over that in any part of the farm.

A Gentleman.—How near are the drains in order to produce that result?

Mr. Smith.—Twenty feet. Having thus described the various modes in which the drains have been formed, and having stated that, so far as my experience and observation go, I think a distance of about eighteen or twenty feet from drain to drain is a proper distance for almost any subsoil, I shall now proceed to detail the application of the subsoil plough.

When I first began to cultivate my own farm, although I had put in the drains, I found they were not so efficacious as I at first expected, and I then began to think of stirring up the subsoil, which gave rise to the idea of the subsoil plough. I thought I must construct an instrument which would execute the work with the least possible power. I made my plough very strong, and of that form to which the least resistance would be opposed, at the same time taking care to have sufficient power fairly to stir up the soil.

I will here explain the principle of the subsoil plough, because I have found that many persons, although seemingly acquainted with it, have not the proper notion of the principle on which it is based. The great principle is, that there are many subsoils, which, though capable of being converted into a good soil, yet if brought up and mixed with the active soil, will so far deteriorate it as to make it for some time sterile. It therefore occurred to me that the great point would be to stir up the subsoil, still retaining the good soil on the surface. Stirring up the subsoil would, in the first place, very much facilitate the escape of the water into the drains; and secondly, in consequence of the passage of the water through the stirred up subsoil, and the attendant admission of air, it would be so acted upon as to be converted into good soil, while at the same time I was having all the advantages of working the active soil as before.

Upon the application of this principle, I found that which I had supposed before was right, and I have been successful in every instance in which I have tried it. The process of applying the subsoil plough is this: a common plough goes along first, and removes a furrow of the active soil. After that the subsoil plough passes along below, and scarifies the subsoil to the depth of from twelve to sixteen inches, in some instances eighteen inches. This is continued furrow after furrow, the plough going first to lay the active soil on the part already opened up; then the plough comes a second time and takes off a furrow from another part of the soil, and places it on that which is already scarified.

Much has been said with regard to the proper period for applying the subsoil plough, some conceiving that it should be applied immediately, and others, at some period after the drains have been out. I think that in places where the drains have much effect, the subsoil plough may be applied the following year: but in clay soils it is of great importance to give the clay sufficient time to dry, and to have it in a sort of friable state; because, in the application of the subsoil plough, when clay subsoil has been recently drained, and it is not sufficiently dry, more harm is done than good: the clay being worked in a wet state is almost prepared for making bricks; and if we once work it in that state it is a long period before it recovers its friable property again. Therefore, I should say that in soils rather free, the subsoil plough may be used the second year after the drainage.

The proper time to execute drains is in the summer season, because you can then get it much more tidily done, and the drains are prevented from running; because in many places there are little sandy veins and portions of running sand, which are very apt to fall in before the drains are covered up. In the winter season this is almost sure to be so; and another disadvantage is, that you may be taken with frost, which draws off the adhesion of the earth, so that it falls down, and fills up the drain. It is best also to execute them in grass land before it is broken up for cropping, because otherwise it is much too soft. Executing it therefore in the summer season on the lee produces very little loss indeed, because you find that the growth of the grass in the after part of the season will be so much increased by the execution of the drains, that you will be repaid for the time lost for the use of the pasture during the time the drains were in process of execution. After the drains have been completed, I would recommend you to take a crop from the land, and if the land has been pretty good, it will, perhaps, afford two crops; at all events, one crop should be taken; and that will pass over one summer before the subsoil is to be ploughed. During this season the earth between the two surfaces has time to dry; it is much more friable, and the subsoil plough will be much more efficacious in stirring it up. Besides, it often happens that there are stones in the soil, which, of course, must be removed before you can proceed with good husbandry; and it will be found that, in consequence of the contraction of the soil, they have become in some degree loose, and will be turned out very easily by the subsoil plough. In many instances we have stones exceeding 200lbs. weight, which are turned out very easily by the subsoil plough with four horses.

With regard to the direction in which the subsoiling ought to be carried, I should say decidedly at right angles with the drains, because you thereby form channels, from the centre to the side, in all directions. In that manner you form artificial channels from the very centre of the ridge into the drain ; and, although these may partially close up, still there is an openness given to the subsoil, which will permit the water to pass freely.

Having thus applied the subsoil plough to stir up the subsoil, the after cultivation may be the common rotation of the country, such as the farmer thinks suitable to the soil. But one thing which I would very much recommend is, that when agriculturists have subsoiled their land, they should follow the practice of laying down the land flat on the surface, without any ridges or furrows. There is nothing more injurious to the land than ridging it up. In the old modes of draining, it was quite necessary to have ridges and furrows; but now, when land is thoroughly drained, there is no occasion for it, and indeed it is hurtful ; because when water falls on a rounded-off surface, it immediately begins to sink away to the lower level, and the water which has fallen on the tops and middle parts of the ridges is added to the water on the side, which thus has to bear a great deal more than its own proportion of the water; the water carries portions of the soil along with it, and the cracks are constantly filling up by the running of the sand from the higher part of the ridge to the lower part. It must be obvious to every one, that when a field is laid down with ridges and furrows, especially on stiff land, a great part of the very best of the land runs down into those furrows, and is deposited in large quantities at the bottom of the ridge, thereby doing a great quantity of material mischief. If it is laid in a flat form you get rid of this great evil, and obtain this advantage—that if the water is beneficial to the soil, which it certainly is, you have that benefit equally distributed; every part receives its own water, and receives the benefit which the water can give.

It is the suggestion of scientific gentlemen who have turned their attention to the subject of agricultural chemistry, that the rain in falling from the atmosphere absorbs a considerable quantity of ammonia; and if there is any affinity in the soil for ammonia, if the soil wants ammonia, the affinity will extract the ammonia from the water, the ammonia remaining in the soil for the nourishment of plants. It is also known, that where artificial manure is put into the soil, some of the fibrous parts of it will be carried away with the water, and be carried down to the region to which it belongs ; and although not so near the surface as it was before, it is near enough for the plants to reach it when they put down their roots.

A very peculiar change takes place in any subsoil—it does not matter what composed of—after it is ploughed. This change begins to take place immediately, and the soil gradually goes from the state in which it was before to that of a mould. If you examine a soil which has become mould, it is of a very peculiar structure. It appears as if all the particles were connected together, and it seems to have some sort of attractive property by gathering together in that way. Vacuities for the air are thus formed, and there is a great tendency to absorb and retain as much moisture as is useful to the plant. If it is filled entirely with moisture it is injurious to the plant, but if there is a certain quantity it becomes beneficial ; and when a great depth of soil is attained, there is great advantage indeed, in anticipation of either a wet season or a dry one. In a wet season the water flows away, leaving the soil in a dry state ; but in consequence of the mouldering state in which the soil is, it is very retentive of moisture, and there is a great magazine of water preserved in soil for a dry season. Being covered by the active soil, the drought may penetrate a few inches, but in consequence of the lower part of the soil being covered with this upper statum, it is defended from the extreme action of the rain, and a very dry atmosphere. Consequently, it will be found that in soil so treated and converted into this mouldy condition, in very dry seasons sufficient quantity of moisture will be retained for the use of the plants, which will grow vigorously when land in the same neighbourhood is completely dry.

A notion has prevailed with some people, that it is possible to drain land too much. I do not think so, from the very fact that the mould becomes an excellent magazine for the retention of moisture. A circumstance took place in regard to this in my own district, in 1826, a very dry season. In that year there was such a long period of dry weather that the pond was dried up, and there was a great deficiency of crops. I had a field which had been treated in the way I have explained, and I had a crop of hay on it. The hay in the country round was very poor indeed, producing not above half a crop. On this field, which I had deepened to 16 inches. I had a very splendid crop. A proprietor of land in the neighbourhood, one of the old school, resisted to the utmost of his conviction with regard to the result of thorough draining and subsoil ploughing. A person occasionally employed by me was also engaged in doing work for him. He had asked about this hay, and the old gentleman was rather puzzled at the state of the crop, and exclaimed that he really thought I had drained my land so much that I should have no crop at all. He was immediately after this completely wedded to the system, and from that day has been vigorously engaged in introducing thorough draining and subsoiling all over his estate ; and he is now having a great deal of poor soil, on a very rich and productive estate, treated in the same way. Taking the average of that gentleman's estate, I should say that he now produces double the quantity of corn that he used to obtain. He now grows potatoes where he could not grow them before, and on the old clay he produces regular and large crops of turnips.

A gentleman wished to know the name of the individual referred to.

Mr. Smith—Mr. Stirling, of Keale.

Another inquiry was made as to whether there was any land where subsoil-ploughing would be successful without thorough draining.

Mr. Smith—I am much obliged for that hint. Many persons have thought that ploughing the subsoil might do without thorough draining, but there are few instances indeed in which that application of the plough will not be hurtful instead of being beneficial. If you have a retentive bottom which will not allow the moisture to pass away, it must remain till absorbed by the atmosphere; therefore the greater the chambers for receiving rain, so much the longer will the land be kept in a wet state. The practice which now prevails in the English clay districts of ploughing with a shallow harrow, has arisen from the experience of ages, which has taught them that on such soils you cannot cultivate wheat if you plough a deep furrow, because you make just so much the larger chambers to receive water. Even in open soils I would not recommend the application of the subsoil plough till the thorough draining had been executed.

A gentleman asked if it was necessary to repeat the subsoil ploughing.

Mr. Smith—It may not be essentially necessary to repeat it, but it is very beneficial. The practice I have adopted is to repeat the ploughing at every shift, every time I break up my fallow.

Another gentleman inquired if it was always done in the same line.

Mr. Smith—Generally; sometimes I have done it obliquely.

Did you ever try it diagonally?

Mr. Smith—Yes; and perhaps it is better to do it in that way according to the drop of the land. The first idea I had was to use the subsoil plough; then I thought I might use the trench plough, and that I might, the next shift, turn up the whole soil, so as to have a complete mixture. In some fields, where the soil was of a better quality, and there was more vegetable matter, I had excellent crops; but, on the poorer soils, I found that by bringing up the subsoil to mix with the active soil, after the first shift, I did a great deal of mischief. I found, especially with regard to grass, that I could not get that growth of plants which I had before; and immediately on observing that, I resolved a third time to go over those fields, and that I would again use the subsoil plough; I have now fallen into the practice of doing so every time I turn. I took up at the first shift, perhaps about 3 inches, even in the poorest field; the next time 3 inches more; and by that means I gradually attained a thorough depth of soil to the extent of sixteen inches. On my own farm I have mentioned that I have a thorough depth of sixteen inches, but that is in consequence of using a trench plough on the second shift; and in some fields that was unsuccessful. If I had had then the experience I now have, I would from the beginning use the subsoil plough at each shift; and instead of going down the whole sixteen inches, I would only take up perhaps three inches the first time and three the next, till I had completed the depth of sixteen inches.

The lecturer was asked if he had ever used lumps of burnt clay.

Mr. Smith—I have seen it done, and it has been pretty successful, but there is considerable difficulty in the manufacture.

A Gentleman—As regards draining in the summer season, how do you get the level?

Mr. Smith—By the spirit-level, of course.

A Gentleman—The great object would be to get it done cheap; but it would be much more expensive if done in the summer.

Mr. Smith—No doubt; but if I had the choice of executing drains during the winter, at an expense of 50 per cent. less than the summer, I would prefer doing it in summer. The efficiency is of far more importance than the expense.

A Gentleman objected, that in summer sometimes the land was too hard.

Mr. Smith—That may be the case in some places, but the great bulk of the land will retain as much moisture as will enable you to get through it with the plough. Of course that will be subject to variation in different parts of the country. In some places it had better be done when the ground is more moist. Still, I would recommend it to be done, not in the winter, but in the spring or autumn.

A Gentleman—I may be perhaps allowed to say that there are cases where subsoil ploughing is effective without thorough draining—as, for instance, in the soils of the moorlands. I have tried it myself in the moorlands, and have found that by simply breaking up that pan which holds up the water which made the lands dry in summer, and wet in winter, all the water escaped; and land before not worth 5s. an acre, let for 20s. after it was done. That was certainly a peculiar case.

A gentleman inquired whether the rocks under the stratification were horizontal or perpendicular.

Mr. Smith—There was very little stratification at all. I am perfectly aware of what has been stated with regard to destroying the pans, such as are placed upon gravel; but, as I have stated, thorough draining may be applied with advantage to sand or to gravel; and though in the gravel the opening must be at a considerable distance, and consequently the water will be long in finding its way out, if it gets into the channel it will go off easily. These dry soils retain moisture a great deal too long for agricultural purposes. A neighbour of mine was draining his land—a sort of irregular subsoil—and in some places had very considerable ruts or rising ground, with sandy and gravel bottom: he instructed his steward to stop the drain when he came to those holes. This was done, and two winters after the gentleman was coursing one day, and all at once his horse sunk over the fetlocks in the soft ground. He called out to his steward to know the cause, and his steward explained that this was the portion of land on which he had desired the drain to be stopped. I mention this fact to illustrate what I have said, that when agriculturists have determined on draining a field they should resolve to drain it wholly, otherwise they are only throwing the expense away. I have seen instances where persons have drained wet parts, and left what they considered dry undrained. They have very soon found that the land which was formerly the wettest was then driest, and that when the part which had been drained was ready to receive the seed, they were delayed a few days till the other portion was sufficiently dry. In a country such as ours, where we have much changeable weather, all agriculturists know the advantage of a single day. Now, if a field is uniformly drained all over, you will, perhaps, be able to sow your seed one, two, three, or four days earlier than if it were not drained; sometimes now you lose the opportunity altogether, because it frequently happens that two or three days intervene; very newly-dried land will be ready for being sown, whereas other land, which was not drained, would require a week or fortnight before you could sow it.

With regard to the application of thorough draining on porous bottoms no doubt much good will be effected without subsoil ploughing. I have found it most efficacious on sandy and gravel bottom. Many persons think, that by so doing, mischief would result; but I have known instances of land of that nature being very greatly improved after being stirred up by the application of the subsoil plough.

A Gentleman—Your observations apply to thorough draining; many people call it *furrow* draining. I wish to know whether you have any reference to deep draining, and how, as in the case of a spring lying deep, you meet the difficulty occasioned by the water. Two feet and a half drains would not touch a spring such as that described on the diagram. How do you get away the spring water?

Mr. Smith—They are called furrow drains, because they are made in the furrows. I call the mode of doing it *thorough* draining. I use the term to express the result. They are called sometimes wedge drains, top drains, and tile drains; but the principle is, that you have the drains sufficiently close together to carry off the water quickly; and then, that the best mode of laying them off for that purpose is to arrange them in parallel lines, and carry them as much as possible in the sloping direction of the land.

With regard to springs, the spring water can do no harm till it enters the subsoil: so long as it keeps below that, you need not care about it. The moment it reaches the bottom of the drain, it finds its way into it, and will be carried off by it. I have found it necessary, sometimes, to carry a drain through the eye of the spring. Springs sometimes come in little channels, at other times in a sheet, according to the nature of the subsoil. When they come in a sheet, the cross-cutting completely scarifies them. If a spring comes out at a round opening and happens to fall in between two drains, I have found it necessary to cut the drain into the eye of the spring. But in every instance where the water flows between two beds, I have found that, by cutting the drain across, it was completely cut off.

I have just received from a landed proprietor and practical farmer, in Ayrshire, the following statement of the results which have attended the practice of thorough draining and subsoil ploughing, according to this system:—

IMPROVED MODERN HUSBANDRY COMPARED WITH THE OLD SYSTEM.

The following important facts have been communicated to the Directors of the General Agricultural Association by a very experienced practical agriculturist:—

I.—Old System.

Statement showing the expense of cultivation of, together with the return from, an acre (Scotch) of cold, stiff soil, with a hard retentive sub-soil, before improvement by draining, &c.; lease for 18 years; rent, 25s. per acre.

Expense of a Six Years' Rotation.

60 bolls lime, at 10d. per boll	£2	10	0
Carting and spreading	1	10	0
First crop - ploughing, seed, and harrowing	1	18	0
Second ditto ditto	1	15	0
Grass seeds and harrowing	0	10	0
Rent for six years, at 25s.	7	10	0
	£15	13	0

Return of a Six Years' Rotation.

1st —5 quarters oats (with straw)	£6	0	0
2nd—5 ditto ditto	6	0	0
3rd—85 stones hay, at 3*l.* per 100 stones	2	11	0
4th—Pasture, at 20s	1	0	0
5th—Ditto "	1	0	0
6th—Ditto "	1	0	0
	£17	11	0

The same repeated till the end of the lease, the land getting worse instead of improving.

II.—New System.

Statement showing the expense of improvement, cultivation, and return from an acre of the same land, during a lease of 18 years; rent the same.

Expense of the first Six Years.

Draining with tiles at 15 ft. interval, 25 in. deep; tiles 21s. per thousand	£7	0	0
Lime, carting and spreading	4	0	0
Ploughing, harrowing, and seed	1	18	0
Second crop—ploughing, harrowing, and seed	1	16	0
	£14	14	0

Expense of Green Crop, viz.

Sub-soil and other ploughings	£4	0	0			
Grubbing, horse hoeing, and weeding	1	10	0			
Dung, 10*l.*; lime, 1*l.* 5s.	11	5	0	—16	15	0
Ploughing for wheat and seed				2	6	0
Grass seeds, harrowing, and rolling				1	5	0
Rent for six years, at 25s.				7	10	0
Interest on expense for draining for five years, at 5 per cent. per annum				1	15	0
				£44	5	0

Return of the first Six Years.

1st —8 quarters oats (with straw)	£10	0	0
2nd—8 ditto, ditto	10	0	0
3rd—Potatoes 1-3rd; turnips, 2-3rds, at per acre	11	0	0
4th—4 quarters wheat, at 60s.	12	0	0
5th—150 stones hay, at 3*l.*; foggage 5s.	4	15	0
6th—Pasture, at per acre	2	0	0
	£49	15	0

Expense of the second Six Years.

1st —Ploughing, harrowing, and seed	£1	12	0
2nd—Ditto ditto ditto	1	10	0
3rd—Green crop, without sub-soil ploughing	12	0	0
4th—Ploughing for wheat and seed	2	4	0
5th—Grass seeds, harrowing, and rolling	1	5	0
Rent for six years, at 25s.	7	10	0
Interest on draining, six years	2	2	0
	28	3	0

Return of the second Six Years.

1st —9 quarters oats (with straw)	£11	5	0
2nd—9 ditto ditto	11	5	0
3rd—Green crop—at least	12	0	0
4th—5 quarters wheat, at 60s.	15	0	0
5th—200 stones hay, at 3*l.*; foggage, 5s.	6	5	0
6th—Pasture, at per acre	2	0	0
	£57	15	0

The expense and return of the third six years will be much the same as that of the second.

ABSTRACT.

I.—*Unimproved Land.*

Expense during a lease of 18 years	£46	19	0
Return ditto ditto	52	13	0
Profit per acre during the whole lease	£5	14	0

II.—*Improved Land.*

Expense of the first six years	44	5	0
Ditto second ditto	28	3	0
Ditto third ditto	28	3	0
	£100	11	0
Return of the first six years	49	15	0
Ditto second ditto	57	15	0
Ditto third ditto	57	15	0
	£165	5	0
Profit per acre during the whole lease	£64	14	0

The above system of cropping is not one to be generally recommended; it is merely adopted because generally followed. If the four or five course rotation were adopted, the profit per acre during the lease would be considerably above the sum mentioned.

Although the above statement applies chiefly to a great portion of the land in Ayrshire, yet it is applicable also to a great extent of Scotland; and these facts are borne out by some of the most experienced practical agriculturists in different parts of Scotland, and cannot be said to be over-rated. If a tenant can do so much single-handed, what might he not do when assisted by his landlord? And what an inducement does not this hold out to proprietors to give assistance to their tenants, when, at the end of a lease, their lands would be doubled in value?

I will now describe to you the mode of constructing the draining tile of Lord James Hay. One way of doing it is to construct the tile on the ground, and then carefully place it in the drain; the other is to execute it in the drain as you go along, and immediately to cover it up. The composition of the tile may be varied considerably, but the proportions which I have found to do very well are—lime 1 part, blackened cinders ½ part, sharp fine sand 3 parts, gravel 3 parts making altogether 7½ parts, or 1 measure of lime to 6½ of sand and gravel; the cinders may either be used or not. The gravel selected should not be of a large size.

[Mr. Smith then exhibited the manner of forming the tiles on the ground near the spot where they are to be used. The machine consisted simply of a large box, in the bottom of which was placed the mounds and cores, the box having at each end holes corresponding with the size of the cores at which to draw them out. The moulds being placed in the box, the box was closely filled with the concrete, which was firmly beaten down, and then the substance to form each tile was compressed by instruments adapted to the length of the tile. The cores were then drawn, the moulds and box lifted, and the tiles left behind, requiring only drying in order to be fit for use. In the present process the concrete was made too soft, and the consequence was that most of the tiles fell inwards, and were of course spoilt. The mode of proceeding was however clearly shown, and the spectators seemed highly pleased with the facility with which the work was done.]

Mr. Smith continued—

In our district lime is very dear; it costs about 1*l.* per ton in the shell. The cost will be—

One ton of lime..............	1	0	0
Half-ton of cinders	0	1	0
Four tons of sand............	0	4	0
Two tons of gravel..........	0	5	6
Grinding.	0	2	6
Workmanship	0	10	0
Total......	£2	3	0

These quantities will make 2880 tiles, which will be about the rate of 15s. per thousand. I would recommend, in all cases, that the gravel and the sand should be ground together, as thereby the lime goes much further. By grinding them, also, in a wet state, they are better prepared to make the mixture which forms the contrete.

A question has been handed to me, as follows:—"What effect have thorough draining and subsoil ploughing on the habit of throwing out the wheat plant by frost?" There is no difficulty in answering this; because it is well known to be owing to the moisture that the wheat plant is thrown out, and whatever removes the moisture, will have the favourable tendency required. I have known many places where almost every winter the greater part of the plants were thrown out. Now, the result of thorough draining and subsoil ploughing is that they retain the plant perfectly well, and have very abundant crops.

The best of the two modes which I mentioned of forming the tiles, is to make them just where the drain is wanted, and in a few days they will become so dry that they can be placed in the drain. One disadvantage is, that these tiles will not stand carting for a length of time. They require several months before they will admit of being laid one over one another. But, in most instances, the making of the tiles can be accomplished on the spot, and in the course of a few days they may be put into the drain. It is, then, of great importance to cover them immediately with some light soil, free from stones, and to beat them down so as to preserve it from injury. If there are any stones in the soil, they may get down to the tile and seriously injure it.

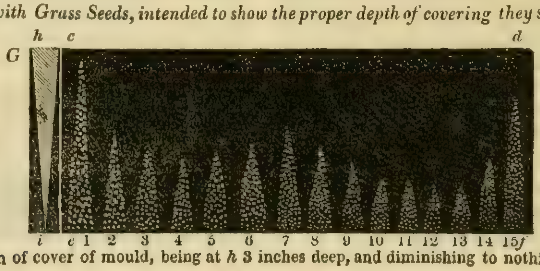
This is an instrument with which to form the tile in the drains.

[The lecturer then exhibited the method of forming the tiles in the drains, which is done by placing the mould in the place in the drain to be occupied by the tile, then laying upon it the concrete, and after pressure by an instrument similar to that used in the former process, drawing out the mould by means of a long handle attached to it for that purpose.]

I have an interesting communication to-day from Scotland, which, though not immediately connected with the subject before us, bears intimately upon it. There are great doubts respecting the propriety of putting seed deep into the soil, or covering it very lightly. Experiments have been made on that subject, but none so conclusively as that which I have now before me, which relates to the springing up of the more tender seeds, the grass seeds; and it shows the great importance of having a shallow covering over them. This experiment was made by the Messrs. Drummond, of Stirling, the individuals who first introduced the agricultural museums.

It was made in this way: a box was provided in depth, varying from nothing to three inches, and the seeds were sown in the box at all depths. The result has been thrown into a table by the Messrs. Drummond, and is as follows:—

Results of an experiment with Grass Seeds, intended to show the proper depth of covering they should receive when sown.



G. section of cover of mould, being at *h* 3 inches deep, and diminishing to nothing at *i.*

The seeds sown 13th May last, on an open border; soil, light sandy; the cover regulated by a frame of wood, 4 feet wide, standing 3 inches deep at *e. f.*, The dots show the plants as they have come up and even with the surface at *c. d.*

1. Lolium perenne—perennial rye-grass.
2. Phleum pratense—Timothy grass.
3. Festuca pratensis—meadow fescue.
4. Trifolium pratense—red clover.
5. Ditto repens—white clover.
6. Medicago lupulina—yellow clover.
7. Plantago lanceolata—rib-grass.
8. Alopecurus pratensis—meadow foxtail.
9. Festuca duriuscula—hard fescue.
10. Poa pratensis—smooth-stalked meadow-grass, very small seed.
11. Dactylus glomerata—cocksfoot.
12. Cynosurus crstata—crested dogstail.
13. Poa nemoralis—wood meadow grass, very small seed.
14. Agrostis stolonifera—fiorin, very small seed.
15. Lolium Italicum—Italian rye-grass.

The rye-grass alone has vegetated at 3 inches deep, but after it passes the middle of the frame, or 1½ inch deep, it is not half so thick. The poas and agrostis will not bear above a quarter of an inch, and the others indicate from a quarter to half an inch as their proper depth.

This experiment tends to show the great importance of a light covering to grass seeds. I have made a harrow of a peculiar construction, which reduces the surface soil very much without tearing up the ground. It has no teeth, but acts by little sharp discs, closely set together, which curve very slightly. I have found this instrument also very efficacious if used as a bush harrow.

A great many questions have been put to me in the course of the lecture, which I have endeavoured to answer as satisfactorily as I could. I now take the liberty of referring to two gentlemen, who have had opportunities of seeing what has been done by the application of thorough draining, and subsoil ploughing. One of these gentlemen is well known as an eminently scientific man, who has visited my farm, and has obtained information as to what it was in its original state, and to what it has attained by cultivation; I mean Dr. Buckland.

Dr. Buckland—Gentlemen, I am one, I believe, of the few individuals present who has had the opportunity of visiting the scene of these most interesting experiments. I believe the term *Dean-stoning* has been applied to the process, but "thorough draining" is the designation given to it by Mr. Smith. Every word uttered by Mr. Smith I can verify from my own personal inspection of his farm. I went there disposed to criticise, and there is but one attempt at criticism that I can offer on all I have heard or seen of Mr. Smith; and that is, that he talked just now of making straight lines round the hill. There may be a rule for doing that in Scotland, but it is at present unknown in this part of the empire. I can find no other fault, and I think that what I have said is the greatest compliment I can pay Mr. Smith. I examined the pond which has been spoken of, and I could find nothing there which indicated the presence of earth. Therefore it is quite clear that there is no tendency by any natural process to fill up those drains. A most important point is the total absence of furrows—an advantage which was not so fully pointed out as it might have been. The wetting which you have in the gutter, and the too great dryness which you have on the upper part of the furrow which you have in an ordinary field, are avoided, and a healthy condition is assumed over the whole field, whether one or one hundred acres. One fact is better than any criticism which I can offer. On my return I visited Sir Robert Peel, and was conducted by him to see the worst farm on his estate. One of the fields which should have had grass upon it consisted in three-fourths of it of burnt clay, and one-half was full of little plashes, which the tenant had covered with rotten dung. It was impossible that the moisture flowing from this could go down; it therefore began to dry, and its whole virtue was going to the wind. Sir Robert admitted the badness of the tenant, and promised to adopt the system I had recommended in one of my pamphlets. I heard no more of the matter till about the end of last autumn, and then I received a letter, which stated that Sir Robert had obtained possession of the farm, and was proceeding to drain it in the manner recommended by Mr. Smith. I hold it very important to get another experiment made in the west of England. I saw—and this shows the connexion of geology with agriculture—what the original condition of the soil was, as there is a small fragment of it over the hedge. Mr. Smith's soil is more than a foot deep, while over the hedge it is not more than three or four inches of the coarsest soil, not worth half-a-crown an acre; the value of Mr. Smith's I will not mention, but perhaps *3l.* or *4l.* an acre would be a fair guess. Now, Sir Robert Peel has in one year wholly changed this by improving the subsoil; and you shall hear the results sent to Sir Robert by his bailiff, to be transmitted to Mr. Smith. After the land had been drained on Mr. Smith's plan, it was limed with four tons of good lime per acre; it was then ridged up, the ridges afterwards split, and rotten dung put between. It was immediately moulded up, and the seed drilled on the ridge over the dung, so that the seed had the benefit of the dung at the first stage of vegetation. The first crop of turnips produced was four times greater than any crop produced on the same field at any previous time. The manure was good farm-made stable manure and farm-yard dung mixed; the proportion was 12 tons an acre; the best crop was 27 tons an acre; the seed (the Herefordshire white) was sown the 21st of June. The second-best (26 tons) was red giant, sown the 23rd June; the next was red top, sown the 24th June; and the next the white glove, sown the 25th June. The whole of the seed was from Skirving's, of Liverpool, and 2½lbs. per acre was sown; the ridges were 24 inches distant from each other. That document was signed by Thomas Hill, Sir Robert Peel's bailiff. This is the result of twelve months' experience only, for Sir Robert Peel wrote to me, and said he sowed under unfavourable circumstances, and his neighbours were laughing him to scorn. Whether or not 26 or 27 tons of turnips an acre is a failure, on land which never before produced 6 tons an acre, it is for you to judge. Here is the whole expense repaid in the first year, and the land for ever worth forty shillings an acre.

Mr. Smith—With reference to the tiles, I would remark that it is better to make them in moist weather than in dry.

A Gentleman inquired how long it would be before the drain could be filled in.

Mr. Smith—I consider it completed when the soil is put over the drain. In an experiment which I made in Forfarshire, as soon as the core had been withdrawn, when the soft soil had been beaten over the concrete, it was fit to be walked over in two days after. Having no greater covering than that on it, I jumped myself on the tile from the surface without doing any injury, so that I consider beating the earth over the tile perfectly secures it from injury, and the moment it is completed it is beyond any danger—one day, at least, after the core is withdrawn.

A Gentleman—If I understood Lord James Hay right, he said it is better not to let the water run through immediately.

Mr. Smith—I should say that precaution was quite necessary; there would be some risk of the lower part being washed and injured. Mr. Littledale, of Cheshire, has also made experiments on the system. I cannot catch his eye, and therefore do not suppose he is here, or he would bear testimony to the advantages of it. The old mode is to have narrow ridges, not more than three inches broad, because otherwise there would be no crop at all. There is generally a fringe like a bristle at the top of the ridge, and there is nothing in the furrow below. There is a gentleman who has followed the plan of thorough-draining and subsoil ploughing, and has laid down his land flat; and he has succeeded in converting a very sterile clay into a clay which has borne a very splendid crop of potatoes, which he has sold this season for 40*l.* an acre.

A gentleman from Berkshire, who had cultivated a portion of Bagshot Heath, spoke highly in favour of Mr. Smith's system, and alluded to that gentleman as having almost taught him the rudiments of agriculture.

The Marquis of Downshire then rose and said—In the absence of Mr. Handley, our worthy and efficient chairman, who has been called away to attend a meeting of the council, I think I may say that I speak the feelings of every gentleman present, in offering the thanks of the meeting to Mr. Smith, of Deanston. *(Loud cheers.)* I believe that Mr. Smith was before the committee of the House of Commons at the time of the inquiry into the state of the agricultural interest in 1836. Since that time, with great outlay and application, he has been indefatigable in his endeavours for the improvement of agriculture. The kindness that he has now evinced in explaining with so much plainness and ability—which is a great object in describing all matters connected with agriculture—must have sunk deep into the minds of all who have heard him; and if there is any gentleman here who has not yet turned his attention to the very valuable subject of drainage, I think this day's lecture will have the effect of directing his view towards a system which must be beneficial to all agriculturists in the three kingdoms. I think I may say that it is the unanimous opinion of this large and respectable meeting, that thanks be given to Mr. Smith for his kindness, and the trouble and expense which he has been put to in giving this gratuitous lecture. *(Loud cheering,)*

Robert Clive, Esq., M.P.—I was present in that committee of 1836, and there I learnt what Mr. Smith recommends us to adopt; and I am very proud to say that it is impossible for any experiments to be made more successfully than has fallen to my lot. Not only have I been obliged to enlarge my rick-yard on account of the increase of the produce, but the state of the land has been forwarded by at least from ten days to a fortnight. So well has the land been cleaned by the mode which Mr. Smith has recommended us to adopt, in reference to subsoil ploughing, that, at a period when harvest is tender and ticklish, we are enabled to carry a week sooner, avoiding thereby the anxiety attendant upon delay; and, in consequence of that, have had a very great advantage over my neighbours. I cannot do sufficient justice to Mr. Smith in taking this opportunity of expressing my hope that many present will follow the example which I have had the good fortune to adopt. *(Loud cheers.)*

Mr. Smith.—I certainly feel very grateful to Lord Downshire and Mr. Clive for what they have said: I have, however, an apology to make, which is, for coming here as I have to-day, knowing the subject well, and trusting that I should be enabled to give you a continuous and distinct statement of the whole subject, and not giving the lecture in that formal and regular manner in which it ought to be done. I have stated nothing but what is perfectly true, but yet I feel I have not done it in that order in which I wish I could have done it. I think the result of this day's proceedings will teach me to come forward on any other occasion when I may have to address such an audience, better prepared, with my subject better prepared, and with my matter united in such a way that I cannot go out of the broadside of it, as I have now unfortunately done. The system has been adopted within the last ten years more generally than I could have anticipated; still there are some districts in which there has been rather a tardy adoption of it. I have confidence in saying that I am sure there is no district of country in which it will not be found beneficial; and no individual who has land, and money to expend upon it, should delay to prove to himself whether it will suit his land or not. *(Loud cheers.)*

At the close of his lecture, which excited the most lively interest, Mr. Smith was invited to consent to its publication. Mr. S. however declined, stating that he had in preparation a work which would enter at length into all the particulars connected with it. Mr. Smith was earnestly invited by the Marquis of Downshire to attend the forthcoming meeting of the Irish Agricultural Society, to be held in Cork, and give to the landed interest on that side of the water the benefit of his practical experience.

Mr. Smith stated that he had the pleasure of intimating that he had been appointed by the Highland Society of Scotland as one of a deputation to attend the meeting at Cork, and that nothing could afford him greater pleasure than to comply with the noble Lord's request, and communicate what he had that day stated—in better order he hoped, for he had spoken merely from memory without having previously committed his lecture to writing.

Sir T. Acland, M.P., closed the proceedings by thanking Mr. Smith, in his own name, for the benefits he had conferred upon the country, and expressing his best wishes for the success of the Agricultural Society of Ireland.

CORN LAWS.—We wish to call the attention o parties, who are so fond of contending that the British farmer has considerable protection by the extra freight which foreign grain has to pay when imported into this country, to the fact, that there are at present in the Tyne three vessels with wheat, one from Bremen, at *sixpence* per quarter freight; another from Hamburgh at *ninepence* per quarter, and the other from Stettin at two shillings per quarter. Vessels, we are informed, are freighting from the ports in the Mediterranean at 4s. 6d. per quarter for wheat. Now, the majority of these rates are much below what the farmers in the northern counties in England pay before their grain gets to market.—*Newcastle Journal.*

THE FARMER.

No. VIII.

On Harvesting Corn.

The very expression harvest conveys to the mind a sense of special activity and exertion, for all have an interest in gathering in the fruits of the earth in due season; and even the lazy lounger who generally prefers the uncertain provision of his beggarly habits, will rouse himself to occasional labour at the harvest, well knowing that a few hours' exertion in assisting the farmer to gather in his hay or corn will be amply repaid by charitable benevolence at other seasons. Who, possessing but a small portion of real humanity and brotherly love, can refuse giving a helping hand in harvest. But, if there is such an unreasonable human being that *will not work*, we must apply to him the words of St. Paul—"such an one should not eat." All, all should be up and doing in harvest time. The variation of the weather in our country, particularly during the summer, and which has of late years become colder, more showery, and unsettled than formerly, renders it imperative to use extra diligence and exertion during the short intervals of fine weather we are favoured with, in collecting and securing the crops of hay, corn, and other farming produce.

In the preceding article, No. 7, page 25, were given a few practical hints for harvesting and securing hay, which it is hoped may be found useful: they are founded upon long and well studied experience, which has never failed of obtaining the desired result, that of securing hay in good condition, even in showery weather. The next subject to claim your attention is the different modes of harvesting various kind of grain; and, first, of wheat as being the most valuable.

The general practice of cutting wheat is by reaping, but in some places it is mown with a scythe to which there is attached a cradle, formed of four or five slight prongs of wood, bent like the scythe and nearly as long, and secured by a frame at the but end. It is yet a matter of doubt whether reaping or mowing is the best mode of cutting wheat; for when the corn is full ripe, the less it is shaken in the cutting the better, as much shaking causes it to shed considerably, and consequently much of the best corn is lost. In reaping, the reaper gathers the straw by small portions at a time in his hand, and when his hand is full he drops the corn on the ground, and so proceeds for a fresh handful, thus shaking the corn he first grasps three or four times before he lets it down. The mower with his cradled scythe, with but one effort, and consequently with only one shaking, makes a sweeping long cut, and lays his corn gently on the ground, in an even swath ready for the binder. In general there are more rakings after the scythe than after the reaping hook, but if the mower does his work well, the difference in quantity of rakings is not much. In both cases it is advisable to bind the wheat immediately after it is cut, and place the sheaves upright, five or six together in stuckles; where (if the weather is fine) they ought to remain two or three days, then be made into field mows, about half a cart-load in each mow—care being taken in making the mows to place the sheaves with their heads to the centre, which should always be kept higher than the sides, reversing the top sheaf that no wet may penetrate the mow. The wheat placed in mows, as above described, becomes mellow and more uniformly ripe, and does not require hauling home for some time; instances have been known of well-made mows being on the field more than two months before they were carried home, and then found to have been well preserved, although the weather has continued very wet. In showery weather the first favourable opportunity should be taken to make the stuckles into mows. In no instance should wheat be left to lay long on the ground, for the chaff and rind being thin, those ears next the ground soon imbibe the moisture, and thus become grown and injured.

Barley is almost always mown with a scythe, sometimes with a cradle, and sometimes without; but in some districts on the sea coast in sandy soils barley is plucked up by the roots—a practice by no means to be recommended, for the sand being retained by the roots, mixes with the corn in thrashing, renders it unpleasant when made into bread, and causes a loss to the maltster.

Barley when cut should be left to lay on the ground two or three days, then turned carefully that the underside of the swath may have the benefit of the sun and air; when it has remained in that state for another day or two, make the same into large cocks, and haul it to your barn or rick-yard at your earliest convenience. Barley thus harvested, if the weather is fine, is sure to turn out well; but if the weather is showery and unfavourable, it is advisable to bind your barley, and manage it in the same way as wheat.

Oats should invariably be bound in sheaves, but as it does not require so much peculiar care as wheat, it may remain on the ground for a day or two after it is cut, before it is bound; but when bound, it must be treated in the same way as wheat, for the straw of oats is a very valuable article of fodder for neat cattle; and he that will not take pains to procure wholesome food for his cattle, cannot be a good nor a wise farmer.

In all cases where corn has been cut, the stubble should be raked as soon as possible, and the rakings carried home to the barn; for the corn in the rakings is as valuable as that in the sheaves. It is a pity to see in wet harvests large quantities of rakings in the corn fields sometimes gathered into small heaps, rotting and worthless, through the laziness and neglect of the owner, whereas by a little extra exertion the whole might have been secured; and even in the wettest weather some portions of it might have been carried home: and should the corn be much grown, it would serve as food for pigs, and the injured straw for litter.

July, 1842. Delta.

BOLSOVER AGRICULTURAL ASSOCIATION.

The first meeting of this association took place at the White Swan Inn, Bolsover, on Monday, the 27th of June, when there were between thirty and forty members present. The chair was taken by Capt. Hallowes, of Glasswell Hall. Robert Arkwright, Esq., of Sutton Hall, was proposed as vice-chairman for the present year, in order that he may become chairman in the following year; as it is provided in the rules that the vice-chairman one year shall become chairman in the following one. John Wright, Esq., of Romeley, was proposed as secretary and treasurer.

The district comprises the following parishes; viz., Ault-Hucknall, Barlborough, Bolsover, Clown, Elenton, Heath, Langwith, Pleasby, Scarcliffe, Sutton, Staveley, and Whitwell.

The committee for the present year was then chosen, which consists of fifteen members, each parish naming one, and the remainder to be chosen from the parish of Bolsover. It was fixed for the general annual meeting to be held on Tuesday, the 27th of September, when the stock will be shewn, and a ploughing match take place. It was agreed that ploughing matches should take place in each parish before the general annual meeting, and that premiums should be allowed for the best ploughman in each parish; and that the winners only of the parochial matches be allowed to contend for the grand premium at Bolsover on the day of the annual meeting.

This society consists at present of sixty-seven members, and the funds at their disposal is 70*l.* 7s., 9*l.* of which is to be given for the small premiums for the parochial ploughing matches, and that 5*l.* more be divided between the best ploughman and ploughboys at the match competed for at Bolsover on the day of the general annual meeting; but of the remaining 56*l.* 7s., it was agreed that 6*l.* 7s. should be kept in hand to meet casual contingencies, and that the sum of 50*l.* be appropriated for premiums for bulls, cows, calves, sheep, pigs, and horses, and for meritorious labouring husbandmen.

Several of the members present expressed their firm conviction that (from the great encouragement the society has already received) the number of members would be greatly increased, consequently the funds would allow of more premiums being given. There is no doubt when the association is fairly set on foot, that several of the gentlemen in the neighbourhood will make donations of premiums to be competed for, as is the case with other societies of a similar nature.

It is also in contemplation of forming a farmers' club, to include the same district as the agricultural society, for the purpose of meeting and discussing the different subjects relating to agriculture.

ON LEASES.

Sir,—In a late correspondence, and also your leading remarks, the subject of leases has been alluded to. There always appears to me a great danger in entering on a long lease at this time. The probability is, from our present position and future prospects, that prices are more likely to reduce than to rise. That being the probability, a tenant, to be remunerated, should take a farm on a lease at less than the rate which the produce for a year or two would give. It will not be easy to get a landlord to let his land on a long lease on any such terms. How, then, is the lease to be obtained? The only fair way is, in my mind, not to make the rent a fixed money payment, but on the principle of the tithe commutation, fixing the quantity of wheat per acre which is to be the rent, the money amount to be at the average price of the year. You will thus deal fairly by the landlord, and instead of the landlord and tenant considering themselves as parties equally entitled to make the best bargain for the future, or one of them at the end of the lease being vexed at having made a bad bargain, and thus in a worse condition for making a new one, they will have cause to consider their interests as mutually combined; and if the tenant has done justice to his take, he will find his landlord ready to renew on liberal terms. The subject of restrictive clauses is the next to be considered. The more general the terms of cropping are, and the better so as to leave the particular crops as much at the choice of the tenant as the nature of the soil will admit. As a general rule, the restriction not to take two white crops in succession is one quite sufficient to prevent the land from being over-cropped; or if the parties chose, the number of white crops (rye, barley, oats, or wheat) between the fallows would be restrictive enough on the part of the landlord, and enable the tenant best to meet the difficulties which seasons and weather will, even with the most active, present to sowing any particular crop on a particular piece of land, at a fixed time. It is also desirable in all cases to simplify the terms of entry and quitting, and to get rid of the valuation of manurances, tillages, ploughings, &c., for from one to three years back, as is I believe, the custom in many counties. It is next to impossible to know whether these have been all applied, and an incoming tenant is laying a portion of his capital dead, and perhaps is crippled in his future progress in some degree. On land well summer-tilled, in strong and well fallowed, and sown with turnips consumed on the land, in free land, if the tenant has an off-going crop paying rent and taxes as standage, he has every encouragement to perform it well, as his crop will receive the benefit, but we all know the same work would not be equally sure to be well done by the quitting tenant for the benefit of the incoming one. The consumption of the crops of roots or green crops on the premises will in general be essential, and in particular situations, if leave be given to sell, a return of manure will be a proper restriction on the part of the landlord. I have also to add, in case of a lease especially, a stated quantity of under-draining yearly, on terms agreed on by the landlord and tenant, is desirable to form part of the conditions of the lease, and probably a fixed value of lime or other manures not produced on the farm. If you think these suggestions worth notice, please to insert them; and I hope you or some of your readers will supply any deficiency there may be, so as to present a general form, applicable to agreements for farms throughout the country.

I am, Sir, your obedient servant,

Holderness, 4*th July*, 1842. Ploughshare.

THE FIRST PRINCIPLES OF AGRICULTURE.—The first principles of agriculture, which are shown by the best practice, are few. They may be stated to be these: make and keep the land perfectly dry and clean, or free from weeds—make and keep the soil which is too adhesive or too loose, of such a friable nature as will make it receive, retain, and transmit moisture, and thus fit it to produce the most luxuriant state of vegetation—restore to the soil, as a manure, in a state of decay, the greater part, if not the whole of the produce after it has been consumed by sheep or other stock. Never manure any land till every weed is exterminated, for weeds grow most luxuriantly in the soil to which they are natural; if any of them are left they will outgrow the plant you intend to cultivate, and take up the greatest quantity of the manure laid on the land.—*Morton's Nature and Property of Soils.*

ON THE ANALYSIS OF BONE-DUST AND RAPE-CAKE, AND THEIR COMPARISON WITH FARM-YARD MANURE.

BY HENRY R. MADDEN, M. D., PENICUIK.

(From the Quarterly Journal of Agriculture.)

In attempting to compare one or more manures with each other, we must endeavour to ascertain what portions of each are really useful, and what is comparatively inert; and we must likewise determine, as far as possible, what is the precise manner in which each portion acts. If these preliminaries be satisfactorily completed, the examination of the relative values of the different manures in question becomes a simple arithmetical question; because, as we have reason to conclude that the like substance will produce the like effect, or, if we have previously determined the relative proportions in which this substance is found in the various manures, the same numbers which express this proportion will at the same time denote their comparative value.

We shall, therefore, in the first place, endeavour to point out what is really valuable in manure, and then demonstrate, by the result of chemical analysis, how much of each of these ingredients is contained in the manures in question.

In my prize essay "on the cause of the inferiority of street manure for raising potatoes," I have pointed out that the real value of manure depends upon the following circumstances.

1st. The quantity of soluble matter present.

2nd. The facility with which those portions, at first insoluble, can be rendered capable of solution by the process of decay.

3rd. The quantity of azote which they contain.

4th. The whole quantity of organic matter possessed by them.

And, lastly. The quantity of inorganic matter which each contains, possessing the same constitution as the ashes of the crops to which it is applied.

Now we do not see that, in the present state of our knowledge, this list of qualifications can be improved upon. It refers to nothing theoretical, and is founded solely upon the results of analysis, as compared with the results of practical experience; we shall therefore adopt the same method of comparison with the manures in question, and shall likewise employ the method of analysis proposed in the same essay.

1. *Bone-dust.*—A good specimen of this article having been selected, 100 grains were exposed to the temperature of 212° F., and retained so long as they lost weight. In this manner it was ascertained to possess 11.5 per cent. of water.

The residue was then macerated in repeated quantities of cold water, which liquid dissolved 4.7 grains.*

Hot water was then employed to discover the proportion of organic matter which would most readily become soluble during decay; this menstruum took up 5.5 grains.

The residue was next acted upon by a weak solution of caustic potass, and thus 26 grains more were dissolved. Strong caustic potass was next employed, and this dissolved 15.5 grains more. We may remark here, that these 15.5 grains dissolved by the strong potass, and not by the weak, correspond to the "*flocculent precipitate*" mentioned by me as falling when the potass solution of farm-yard dung was diluted with water. In order to determine the per centage of this flocculent precipitate, I employed first a weak solution of potass, and subsequently a strong one; whereas I formerly used the strong one at the first, and afterwards diluted it. The remainder was then heated to redness, and in this manner, 6 grains more were driven off.

The residue then weighed 30 grains, and consisted almost entirely of phosphate of lime, with a small quantity of carbonate.

The composition of bone-dust, therefore, is—

	Water	11.5
Organic matter, with some saline materials.	Soluble in cold water	4.7
	.. in hot water	5.5
	.. in weak potass	26.
	.. in strong do.	15.5
	Destroyed by heat	6.
	Phosphate of lime	28.
	Carbonate of lime	2.8
		100.

2. *Rape-cake.*—This substance was scraped down until it was as fine as when drilled in; and 100 grains dried at 212° F. In this manner the presence of 10.5 grains of water was determined. It was then acted upon repeatedly with cold water, which dissolved 24.7 grains. The first waters were of a bright yellow colour, whereas the latter ones were red, proving that the tendency to decomposition was so strong that it had commenced during the progress of the analysis.

Hot water then dissolved 4.8 grains. Weak caustic potass removed 31.5 grains; and subsequently a strong solution dissolved 10.2.

When heated to redness it lost 14.3 grains more; thus leaving 4 grains of inorganic matter, consisting of phosphate of lime and magnesia, with a small quantity of silicate of potass.

The constitution of rape-cake is, therefore, as follows:—

	Water	10.5
Organic matter	Soluble in cold water	24.7
	.. in hot water	4.8
	.. in weak potass	31.5
	.. in strong do.	10.2
	Destroyed by heat	14.3
	Earthy phosphates	3.
	Silicate of potass	1.
		100.

3. *Farm-yard Dung.*—Different specimens being examined, some of which contained more stable-manure, and others consisting chiefly of dairy-refuse, the mean result was as follows:—

	Water	45.535
Organic matter	Soluble in water	10.75
	.. in potass	14.25
	Destroyed by heat	18,565
	Salts of potass .. of soda .. of lime Silica	7.9
	Earthy phosphates	3.
		100.

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* The bones were used in the coarse powder in which they are applied to soil; for it would have been obviously unfair to powder them, as we wished to know what will be soluble *in the soil,* and not *all* that *possibly* can be dissolved.

Now, if we compare the three manures together, we shall obtain the following results:—

	Bone-dust.	Rape-cake.	Farmyard dung.
Water	11.5	10.5	45.535
Total organic matter	33.5	75.5	33.565
Soluble matter	10.2	29.5	10.75
Easily dissolved matter*	41.5	41.7	14.25
Earthy phosphates......	55.	3.	3.

In viewing the above table, an apparent discrepancy will be discovered regarding the amount of phosphates in bone-dust; it being stated in the table as amounting to 55 per cent., and in the previous analysis as only 28 per cent. This is owing to the phosphates being soluble in caustic potass to a certain extent when combined with organic matter; and hence, when bones are at once burned so as to ascertain the actual quantity of phosphates, they are found to amount to nearly double of what was left after the action of water and potass.

The above analysis does not determine the quantity of azote contained in the various manures; but separate analyses for this purpose shew the proportion to be as follows—bone-dust 1.77 per cent., rape-cake 4.92, farm-yard dung .45. So that, to compare the manures with each other, according to the qualities laid down at the commencement of this paper, we shall have—

	Bone-dust.	Rape-cake.	Farmyard dung.
Soluble matter	10 2	29.5	10.75
Easily rendered soluble..	41.5	41.7	14.25
Azote	1.77	4.92	.45
Total organic matter....	33.5	75.5	33.565
Saline matter..........	55.	4.	10.9

Hence it follows, that one ton of bone-dust equals,

As regards—

Organic matter......	1.	ton	farm-yard dung.
Soluble matter........	1.	ton	do.
Easily dissolved......	2.9	tons	do.
Azote	3.9	tons	do.
Saline matter........	5.	tons	do.
Earthy phosphates....	18.3	tons	do.

If, now, we add together all the various degrees in which bone-manure is superior to farm-yard dung, we shall find that 1 ton of bones equals 30 tons of farm-yard dung.

But only 16 bushels of bones are applied per acre, which, at 56lb. per bushel, will weigh 8 cwt., which will therefore equal, according to the above calculation, 12 tons of farm-yard dung.

Rape-cake examined in the same way will give the following results. One ton of rape-cake equals,

As regards—

Organic matter......	2.2	tons	of farm-yard dung
Soluble matter......	2.78	tons	do.
Easily dissolved....	2.9	tons	do.
Azote	10.9	tons	do.
Saline matter......	.36	ton	do.
Earthy phosphates..	1.	ton	do.

In this instance, if we add up all the degrees in which rape cake is superior to farm-yard dung, and then subtract the inferiority in the saline matter, we shall arrive at the conclusion that 1 ton of rape-cake equals 18.42 tons of farm-yard dung!

We now ask the question, could anything be more satisfactory?

"Extensive experience has proved, that a ton of bone-dust or rape-dust is equal, in the production of turnips, to 15 or 20 tons of well-prepared farm-yard manure."

Chemical analysis has now proved that a ton of bones is equal to 30 tons, and one of rape-dust to 18½ tons, of farm-yard manure.

Where is the necessity for comment? and who will now doubt the efficacy of chemistry for the purpose of unravelling the mysteries of practical agriculture?

We shall not, however, close this essay without making a few practical remarks bearing upon the subject under consideration; and this we shall do under the two following heads: 1st—particulars regarding the application of manures in question; 2nd, a few observations concerning the turnip-crop.

1st, Certain particulars regarding the application of bone-dust and rape-cake.

On surveying the foregoing analysis of these manures, it will be at once perceived that they owe their respective values to very different ingredients; bone-dust possessing its great superiority in the earthy phosphates, whereas rape-cake owes it to the large excess of soluble organic matter. This being the case, it follows necessarily that they must be treated differently in their application. For example, bone-dust, from its efficacy residing in saline and earthy matter, and its organic ingredients being in no great abundance, will never become what is termed too hot a manure; or, in other words, the heat of its fermentation will never injure the seed; this manure may therefore be advantageously *drilled in with the seed*. Rape-dust, on the other hand, owes its superiority to *soluble organic matter*; it therefore will ferment very rapidly, and the heat produced will of course be considerable. This manure, therefore, must *never* be in *contact with the seed*; if drilled at all, the plough must cover it with earth preparatory to the sowing of the seed. Again, as the quantity of earthy phosphates required by various crops is comparatively small, while the proportion existing in bones is very large, it follows that, beyond a certain point, any increase in the quantity of bones applied to soil will not be followed by a corresponding increase in the crop. *Lastly*, as these manures act more as stimulants than otherwise, it follows that although in some respects their effects may appear lasting, still upon the whole, they will never act *throughout the rotation* with as much certainty as farm-yard dung. Such are the observations which theory would lead us to adopt. What says experience?

By inquiring of farmers who are in the habit of employing these manures, we obtained the following particulars regarding their use.

Bone-dust.—When this manure is used, they do not find it advantageous to trust to it alone, but always *feed off* at least half of the turnip crop with sheep. The effect is visible in the third year of the shift, by the grass crop being fully earlier, but at the end of the rotation the soil is always *poorer* than when farm yard-dung is employed.

Rape-dust.—Care must be taken in the application of this manure, because, if drilled in with the seed, it would inevitably "*burn it up.*" When used for barley, the dust is sown about eight days before the seed; and when required for turnips and potatoes the manure is drilled in, the plough then follows, which throws some earth over, and the seed is placed above. Barley manured with rape-dust is dark coloured, and *always light weighted* (this is a proof of the application of a stimulant). Thus we perceive that in every detail theory and practice completely corroborate each other.

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* Under the head "Easily dissolved matter," is included all that is soluble in caustic potass.

2nd, We shall now therefore, in conclusion, make one or two observations regarding a peculiarity observed in the turnip-crop.

It has been frequently remarked, that if the turnip be supplied with a small quantity of active manure during the first periods of its growth, a good crop will be obtained, entirely disproportioned to the amount of manure applied. Thus for instance, 16 bushels of bones will raise as heavy a crop of turnips as 16 tons of farm-yard dung, although, as far as regards organic matter, these two manures are equal, ton for ton.

Now the cause of this is the following:—After the turnip has once obtained a large absorbent surface, in the form of large leaves, it becomes almost totally independent of the soil, and obtains by far the greater portion of its nourishment from the atmosphere; and hence it follows, that whatever manure is sufficient to obtain a good steady growth at the first, will be likewise sufficient to obtain a good heavy crop. Now the organic matter of bones appears peculiarly capable of effecting this desirable end; and the consequence is that a very small quantity of this manure produces the same effect as a much larger proportion of many other kinds.

We trust that the foregoing observations will satisfactorily reply to the Society's question regarding the cause of the greater fertilizing powers of these manures, and that farmers will now no longer believe their effects to be more *magical than natural.*

REMARKS ON DR. MADDEN'S ESSAY ON "THE ANALYSIS OF BONE DUST AND RAPE CAKE, AND THEIR COMPARISON WITH FARM YARD MANURE"—GIVEN ABOVE.

BY M. M. MILBURN.

Dr. Madden is one of the best agricultural chemists in the kingdom; his writings display clear views of vegetable physiology—deep acquaintance with chemical modifications and agencies; and he conveys his ideas in language, philosophic indeed, but clear, beautiful, and devoid of all parade of technicality.

The Highland and Agricultural Society awarded the gold medal for the above essay, and I have heard it characterised by persons of standing as possessing great value, and settling the question. With this I do not agree; I think the Doctor has in this case most completely failed: his data by an odd disarrangement became erroneous—his calculations bad in principle, and his conclusions fallacious. This I undertake to shew; it is for men of science to say whether his views or mine are right.

The whole blush of the essay tends, indeed, to illustrate his opening assertion, that it is an "arithmetical question;" the figures appear very beautiful, but there are woeful discrepancies in the calculations before the result is arrived at.

His first separate analysis of bones, rape cake, and farm yard dung, I call tables 1, 2, and 3.

(1.) BONES.

Water		45.535
Organic matter.	Soluble in cold water	4.7
	,, in hot water	5.5
	,, in weak potass	26.
	,, in strong potass	15.5
	Destroyed by heat	6.
Phosphate of lime		28.
Carbonate of lime		2.8
		100.

(2). RAPE DUST.

Water		10.5
Organic matter.	Soluble in cold water	24.7
	,, in hot water	4.7
	,, in weak potass	31.5
	,, in strong potass	10.2
	Destroyed by heat	14·3
Earthy phosphate		3.
Silicate of potass		1.
		100.

(3.) FARM-YARD DUNG.

Water		45.535
Organic matter.	Soluble in water	10.75
	,, in potass	14.25
	Destroyed by heat	18.565
Salts of potass		7.9
,, of soda		7.9
,, of lime		7.9
Earthy phosphates		3.
		100.

Instituting a comparison of these tubes, he gives the following tabular result—(Table 4.)

	Bones-dust	Rape-dust.	Farm-yard dung.
Water	11·5	10.5	45.535
Total organic matter	33.5	75.5	33.565
Soluble matter	10.2	29.5	10.75
Easily dissolved matter*	41.5	41.7	14.25
Earthy phosphates	55.	3.	3.
	151 7	160.2	107.1

It appears by these additions of the parts *which are my own*, and are not given in the Doctor's essay, that the constituents in table 4 do not agree either with themselves, as compared with tables 1, 2, and 3, nor with each other. Some alteration in the proportions must have taken place in some of the manures subjected to analysis—as exhibited by this summary—unperceived by Dr. Madden, for I suppose he had intended to give the whole constituents of each in comparison; whereas we have 151 parts of bones, 160 parts of rape dust, and 107 parts of farm-yard dung—more than 50 per cent. less of the last named.

This arises probably from his reckoning some of the constituents of his former tables twice over. For example, in the 1st table he gives the total organic matter of bones as follows—

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* "All matter soluble in caustic potass."

Soluble in cold water	4.7
,, in hot do	5.5
,, in weak potass	26.0
,, in strong do	15.5
Destroyed by heat	6
	57.7

Instead of 57 parts of organic matter as in table 4, he gives to bones 33.55, and the easily dissolved matter as 41.5; evidently making his addition thus—

Soluble in weak potass	26.
,, in strong do	15 5
	41.5

Now, taking away this 41.5 parts soluble in potass, where does he get 33 5 parts of organic matter, seeing the whole of the organic matter is only 57.7?

It appears that in the 1st table the whole of the soluble matter is included in the organic matter. Therefore, if in table 4 any distinction is made between "organic" and "soluble," the organic should represent only the parts insoluble. It appears to me that the Doctor by modes like this, has much multiplied the constituents of bones and rape dust, and not those of farm-yard dung in an equal ratio.

Again: he gives the phosphates, in the first table, as regards bones, to be 28.; but in the fourth table he gives the same as 55. Certainly, he explains this by saying that the phosphates are soluble in caustic potass to a certain extent, and that by *burning* bones 55 per cent. was discovered; he therefore substitutes 55 in table four for 28. It must, however, be clear, that the caustic potass would have the same effect upon the phosphates in the farm-yard dung as in the bones; and, therefore, why not submit the former to burning as well as the latter? Supposing the same per centage of the potass to be dissolved in the analysis of the farm-yard dung, as in the bones, it should stand 6 in table four instead of 3. As the above analyses do not determine the quantity of azote in each kind of manure, the Doctor made separate analyses for this purpose, and found the proportions to be—Bones, 1.77; rape-dust, 4 92; farm-yard dung, 45. These he *adds to the table*, though it must be clear that, as the azote is obtained by decomposing some of the component parts of the manures, so much of each as is thus decomposed ought to be deducted from the column when the azote is added to it. This does not appear to be of so much importance at first sight; but I shall shew presently, by the arithmetical mode of investigation which the Doctor has adopted, that it assists in giving a fallacious result.

Taking the first three tables with a view to comparison, I think the fourth table ought to stand thus:

	Bones.	Rape-dust.	Farm-yard dung.
Water	11.5	10.5	45.535
Total organic matter	57.7	85.5	43.565
Earthy phosphates	28.	3.	3.
Carbonate of lime	2.8	0.	0.
Salts.	0.	0.	7.9
Silicate of potass	0.	1.	0.
	100.	100.	100.

The above is, I submit, a legitimate and fair comparison, because the parts agree in all their relations; but, if it were deemed desirable, as I think it is, to institute a comparison between the soluble and insoluble portions of each manure, I think the table ought to stand thus;—

	Bones.	Rape-dust.	Farm-yard dung.
Water	11.5	10.5	45.535
Easily dissolved matter	51.7	71.2	25.
Organic matter, not easily dissolved	6.	14.3	18,565
Saline matter	30.8	4.	10.9
	100.	100.	100.

This, again, is perfectly clear and intelligible. As I before stated, in the fifth table there is still greater perplexity, because the azote added to each is obtained by a separate analysis; and therefore bears no relation whatever to the other constituents, because we do not know how great a portion was decomposed in obtaining it. So, also, the phosphate of lime is *doubled* in the "bones" column, without any deduction from the soluble matter from which, I apprehend, it must be extracted; and thus it stands in the same position as the azote, so far as its having no relative proportion to the other columns and ingredients. Why was not a portion of the farm-yard dung burnt also, in order to ascertain how much more phosphate of lime could be obtained by this treatment, as well as the bones? The sixth table is very ingenious—it is very beautiful as a piece of arithmetic; but it is quite fallacious in principle, as well as being deceptive in result; because the relations of the different constituents in the preceding tables are destroyed, which makes the deductions quite useless.

The Doctor has not stated whether the farm-yard dung was at all fermented. By his expression "dung," I apprehend it was not; whereas the society's expression was "manure," and this is generally expressive of its state when applied to the soil, and therefore the proper subject for examination. Assuming this, it will be observed that, if the vegetable fibre were broken down by the fermentative process, I am inclined to think the phosphates would have been in a greater proportion in the dung, and less than 18 per cent. would have been destroyed by heat.

In the sixth table the Doctor uses the following, to me, new mode of calculation and reasoning:—

One ton of bones equals, as regards—

Organic matter	1.	ton of farm-yard dung.
Soluble matter	1.	,,
Easily dissolved	2.9	,,
Azote	3.9	,,
Saline matter	5.	,,
Earthy phosphates	18.3	,,

"If, now, we add together the *various degrees* in which bone manure is superior to farm-yard dung, we shall find that 1 ton of bones equals 30 tons of farm-yard dung."—p. 531.

To prove this mode of calculation fallacious, I would take the Doctor's own tables four and five; admit them free from error, and it must be clear that if his calculation as regards bones and dung, taking bones as the standard, be correct, it must also be clear that the converse must be also accurate, taking farm-yard dung as a standard; therefore reverse the order, and say—

One ton of farm-yard dung equals, as regards—

Organic matter	1.	ton of bones.
Soluble matter	1.	,,
Easily dissolved	.22	,,
Azote	.4	,,
Saline matter	.25	,,
Earthy phosphates	.17	,,
	3.04	tons.

Thus, if we take together the various degrees in which farm-yard dung is superior to bones, we find that one ton of farm-yard dung is equal to three tons of bones; or, what is much more intelligible, take bones and rape-dust as under:—

One ton of rape-dust equals, as regards—

	Tons of bones.
Organic matter	2·2
Soluble matter	3 00
Easily dissolved	1·00
Azote	4·00
Saline matter	0·13
Earthy phosphates	0·18
	10·51

By adopting the Doctor's process of calculation, the result is, that one ton of bones is equal to ten tons of rape-dust. We know this is quite erroneous; and no better proof is needed of the inconclusive and fallacious mode of calculation the worthy Doctor has adopted. But, supposing this a legitimate mode of determining the qualities of the manures in comparison, the tables ought to be distinctly correct in all their relations. For instance, no part of the constituents of any kind of manure ought to be twice reckoned. Taking, therefore, my corrected table, and adopting the Doctor's mode, it will stand thus, instead of table 6:—

One ton of bones equals, as regards—

Easily soluble matter	0·5 tons farm-yard dung.			
Organic matter, not easily dissolved	0 3	do.	do.	do.
Saline matter	3·0	do.	do.	do.
	3·8 tons.			

Hence it will appear that it is the repetition and recalculation of several of the constituents which makes so great an apparent disparity. I would ask, does not "saline matter," in Doctor Madden's sixth table, embrace the same constituents as "earthy phosphates?"—thus counting the phosphates twice over, and these *doubled in the first instance, as regards bones,* as I previously showed them to be.

I mention it with deference, but I arrive at the conclusion, that the Doctor's views are entirely erroneous. If I am wrong, I beg his pardon, and no man is better able to show me to be so than himself; and when he does, I shall be glad to acknowledge my error. But may not other persons be equally perplexed as myself? and it is desirable that for the sake of science he should explain his processes more fully.

With his practical deductions I equally differ. "Bones," says he, "will not act through a rotation." I know a miserably poor field, which has been manured with bones only for a period of sixteen years—that is, four times in that period; and it grows excellent crops of turnips, corn, and seeds. Before bones were applied, it was almost impossible to obtain a good crop of turnips upon it. "Barley," says he, "manured with rape-dust, is always bright-coloured, and weighs light." A relative of mine, an excellent farmer, Mr. John Thomlinson, of Wighill, near Tadcaster, invariably uses it for barley, on a clay soil and ungenial to barley. It grows a good malting sample, of a *fine colour,* and it *weighs more than the barley from most regular barley soils!*

"Rape-dust must never be in contact with the seed." Mr. John Rob, of Thorpfield, and myself, drill in immediate contact with the seed, and with the best result.

Doctor Madden attributes the superiority of bones over farm-yard dung to the phosphates being more; to rape-dust, to the greater quantity of soluble organic matter. Now, how stand the facts? The phosphate of lime in bones is 55 per cent. Supposing the farm-yard dung to be burnt in the same way as the bones were to obtain this result, and supposing the quantity showed an increase per cent. by this mode of analysis, equal to that the bones did when subjected to it, instead of the caustic potass, or 50 per cent., farm-yard dung would contain six per cent. of phosphate of lime; and if fermented, and the mass reduced both in bulk and weight, probably more; but take this:—

8 cwt. of bones are applied per acre, or about 4 cwt. of phosphate of lime.

10 tons of farm yard manure per acre, or 200 cwt.=12 cwt. of phosphate of lime.

So that it really appears that a dressing of farm-yard manure contains, and supplies the soil with, *three times* the amount of phosphate of lime that a dressing of bones does. Apply the same test to rape-dust, and the result shows that there is really less soluble organic matter applied to the soil by an ordinary dressing of rape-dust than one of farm-yard manure.

Having said thus much, the question arises—wherein is the difference practice exhibits to be found? I answer, simply in the azote, and *that only.* This was my own view of it, before the Doctor gave his paper. The Doctor gives bones 1·77, rape dust 4·92, farm-yard dung ·45 of azote. This sufficiently answers the question the society put in the conditions, without the dry calculations.

Azote is a constituent of all plants, and is *constantly sold off the land* by the farmer in corn and stock. Bones and rape-dust supply it, and in a form much more fixed and available than in farm-yard manure; where it exists in but small quantities and in a very volatile state, and very much evaporates during its application. I will not further pursue the theory now: a paper of mine, written before Doctor Madden's was published or read, is now in hands where it may see the light. Until then, I wait impatiently for the Doctor's explanation.

Thorpfield, Thirsk, Yorkshire,
July 2, 1842.

PAINTING THE FACES OF SHEEP!—At the late meeting of the North Hants Agricultural Society, Henry Fellowes, Esq., the President, and brother of R Fellowes, Esq., of Shotesham, Norfolk, gave the following amusing account of the tricks resorted to to show stock to advantage. One man trimmed his stock, another sheared them down very closely, and he believed that some shaved them. *(Much laughter.)* Such was the zeal of some parties, such the knowledge of the importance of evenness of appearance, that it had come to the knowledge of the committee that some individuals had actually painted the faces of their sheep. *(Much laughter.)* Whether this exceeded the rules, or whether the Society sanctioned this sort of painting, he was not prepared to say; but if the committee did sanction it, they must alter the rules, because there was one which stipulated that all sheep stock exhibited for premiums should be properly washed. Now he would ask, whether this meant that they should wash their feet only, and not their bodies. If painting was to be continued, in future such stock would be shown up like elderly ladies in a drawing-room. (*Laughter*) Whether this practice had been introduced by his friend Mr. May, he would not venture to affirm; but if his stock had been fed by ladies, perhaps they did it. (*Laughter.*) It was an opinion which he had long entertained, and that opinion was confirmed by the proceedings at Overton Fair, where it was agreed that ram stock should be shown in its natural state, thinking it "when unadorned, adorned the most." These painted sheep had not only deceived common observers, but even the scrutinizing eye of that active and intelligent person Judge Humphrey, and all the judges of the show, and had borne away the society's premiums in triumph.

ON AGRICULTURAL CHEMISTRY.

(FROM THE LANCASTER GUARDIAN.)

[*Continued.*]

172. WEEDING may be considered merely a mechanical operation; yet chemical principles, judiciously applied, would be very conducive to its success, and would encourage the farmer to dispute every inch of ground with his ancient and multitudinous foes.

173. Azote and the alkalies constitute an important portion of the juices of every part of every plant (101); they are, undoubtedly, most powerful agents in promoting vegetation, as well as in advancing decomposition. Every species of weed extracts from the soil some portion of the food required by cultivated plants, and some weeds, as wormwood, absolutely exhaust the land they grow upon of its alkalies. Every weed selects for itself a locality suitable to its nature, and if allowed to grow undisturbed, impoverishes and overpowers the cultivated plant which is not so favourably situated. It is at the early period of their growth that all young plants require to be protected from the baleful influence of weeds, which are then doubly injurious, by intercepting the light and air of the sky no less than the food supplied by the soil. It is also when weeds themselves are young, tender, and succulent, that they can be destroyed with the least trouble and to most advantage; they then require little force to draw them from the ground, their power of doing injury is at once arrested, and abounding then in saline and azotised juices they soon ferment, decompose, and restore to the soil in a soluble state whatever they may have abstracted from it. They should never be allowed to ripen their seeds, and if this rule be attended to the trouble and waste of burning will be avoided. Weeding, therefore, to be successful must be unremitted; it is the most important operation of the farm—the legible characteristic of good or bad farming, as draining is of good or bad ownership. Of all mechanical improvements in husbandry, those which facilitate the sowing of plants in drills, and the frequent hoeing and scarifying of the intervening soil by horses, or by manual labour, are the most valuable. We have by these means, not only the benefit of frequently loosening the soil about the roots of plants, to promote vegetation, but the additional advantage of so eradicating weeds as to convert them into nutritive matter.

174. Another word as to the burning of weeds. (168, 170.) No absolute rule can be insisted upon. Whenever carbonaceous matter is abundant, there is perhaps as much advantage gained by slowly burning refractory vegetable materials as there is loss sustained by the dissipation of ammonia in the process. But on the principles of M. M. Boussingault and Payen, already referred to (168), a slow smouldering fire would be most suitable to produce carbonaceous ashes. These should be carefully reserved for the purpose of disinfecting azotised substances, or they might be increased in bulk, perhaps enhanced in value, by the admixture, before the operation of burning, with ferruginous or other kinds of clay (169), or with as much calcareous marl as could be brought to a red heat. When advantage is taken of a continued dry season, and a good store of combustible materials can be collected together, a very large heap of burnt ashes may be prepared, and become the basis, under proper management, of a far larger and more valuable compost.

175. SALT—*Muriate of soda; chloride of sodium; common sea salt.*—So long as this substance was subjected to a heavy duty, one of the arguments most urgently pressed against the tax was the benefit that would accrue to agriculture from its repeal. Experience has not realized that benefit, and, at least in this country, it seems now to be generally believed either that the beneficial effects of salt as a manure have been overrated, or that sea storms and the large economical use of salt supply to the soil as much of this ingredient as it requires. Very few land plants seem to contain much soda, and there appears little reason for believing that either chlorine, uncombined, or muriatic acid, which contains chlorine and hydrogen, are of any value as manures. We might, therefore, have entirely passed by the subject of common salt without much loss; but there are some facts connected with it that deserve to be noticed; these, as it will appear, have led to useful applications in other arts, and may possibly be found applicable also to agriculture.

176. If we dissolve some marble or chalk in diluted muriatic acid, and some carbonate of soda in rain water, we can allow the solutions to stand aside until they become clear, then pouring one into the other we shall see that the mixed liquids become milky, and by and bye a white powder subsides to the bottom, leaving the liquid above again transparent. If proper proportions have been used, the white powder will be chalk or carbonate of lime, and the remaining liquid will contain common salt. The theory of this experiment is stated in popular language to be this—lime has a greater affinity than soda for carbonic acid, and soda has a greater affinity for muriatic acid than lime; therefore the carbonic acid quits the soda to unite with the lime and form carbonate of lime, which falls to the bottom, and the muriatic acid quits the lime to form muriate of soda or common salt that remains dissolved, but may be obtained by boiling away the water.

177. Again, we have seen that lime is used by the soap-boiler to deprive carbonate of soda of its carbonic acid (87), therefore nothing would seem to be more clearly established than this, that lime cannot deprive salt of its muriatic acid, nor could we expect to make anything of common salt by means of lime. We cannot say how it is, yet so it is.

178. "In the memoirs of the Stockholm Academy, for 1779, there is a short but curious paper of Scheele, giving an account of some results which he had obtained. If a plate of iron be moistened by a solution of common salt, or of sulphate of soda, and left for

some weeks in a moist cellar, an efflorescence of carbonate of soda covers the surface of the plate. The same decomposition of common salt and evolution of soda takes place when unslaked quicklime is moistened with a solution of common salt and left in a similar situation. These experiments led afterwards to various methods of decomposing common salt and obtaining carbonate of soda. The phenomena themselves are still wrapped in considerable obscurity."—*Thomson's History of Chemistry, vol. II., p.* 70. Subjoined is Scheele's short and valuable paper, as translated by Dr. Beddoes—(Essay xv., "On the decomposition of neutral salts by unslaked lime and iron," p. 255.)

179. "It is looked upon as a demonstrated truth in chemistry, that fixed alkalies have a stronger attraction for acids than absorbent or metallic earths, and that the latter are precipitated by the former. There seem to be only two exceptions to this rule, namely, in favour of ponderous earth *(Baryta)* which has a stronger affinity for all acids and lime, which unites more readily with most acids than alkalies do. That the foregoing tenet should be still farther limited, I have discovered by the following experiments.

180. "I once found in a cellar a wooden vessel, hooped with iron hoops, and containing salted turnips. The iron hoops were covered over with a salt which appeared perfectly to resemble mineral alkali (*soda*). This accident appeared very singular, as I well knew that the acid of salt (*muriatic acid)* has a weaker attraction for iron than for mineral alkali; I could not therefore believe that the common salt, oozing out through the wood, could be decomposed by the iron hoops. To resolve this doubt a clean plate of iron was dipped into a saturated solution of common salt, and hung up in a moist cellar. In fourteen days the mineral alkali was found on the plate. There appeared also some yellow drops containing iron, which was precipitated when a little of the alkali that was beside them was brought close to them. I afterwards covered over another iron plate with a saturated solution of Glauber's salt *(sulphate of soda*), and hung it up for some weeks in the cellar. The result was that fossil alkali *(soda)* effloresced on its surface like wool. The same thing happened upon repeating the experiment with cubic nitre (*nitrate of soda)*; but when I used plates of lead, tin, copper, or silver, no decomposition took place. I afterwards prepared a mass, consisting of unslaked quicklime, moistened with a solution of common salt, and placed it in a moist cellar; in a fortnight afterwards the surface was covered over with mineral alkali, which I scraped off, and left the remainder in the cellar. In another fortnight more alkali was visible on the surface, which was scraped off. Water was poured on the remaining mass, and it was well stirred and filtered. The solution had a strong taste of lime water, on which account I let it stand a few days in the open air, by which means the lime was precipitated. And to determine with more certainty, whether the lime was all precipitated, I poured on it a solution of corrosive sublimate, which remained colourless. The whole was then filtered, and a solution of the efflorescent mineral alkali added to it, by which a considerable quantity of aerated lime (*carbonate of lime*) was precipitated.

181. "In the same manner I made a mass of quicklime and Glauber's salt, and cubic nitre, when the same effect was produced, and an efflorescence of fossil alkali was observed: but this did not happen when aerated or calcined magnesia, or aerated lime were used instead of unslaked lime.

182. "It is certain that fossil alkali always precipitates solutions of iron and lime; and it is a consequence of this, that fixed alkalies more readily combine with acids than these substances. The experiments, however, which I have related, point out a limitation in certain cases. It is therefore probable that alkalies have a stronger attraction for acids when they contain a certain quantity of water; but when this is diminished, it is not impossible that an earth or a metal should obtain the superiority, especially if the alkali which is separated, should, at the instant of its separation, meet with a weaker acid with which it can unite. Such is the aerial *(carbonic)* acid in this case, which is always present in considerable quantities in cellars.

183. "It appears strange that the fossil alkali efflorescing upon iron plate, should not be able to precipitate the drops of the martial solution resting upon it: but the cause is this, that the solution of iron in muriatic acid, when it has become dry, strongly attracts moisture, and the alkali which is then separated and effloresces, cannot afterwards produce any effect upon it.

184. "If vegetable alkali (*potash*), like the fossil, had the property of efflorescing, the neutral salts into which it enters would probably be decomposed in the same manner; but as they have not this property, this does not happen."

185. The late Dr. Darwing concluded that calcined clay, as it exists in soft bricks, had the power of decomposing salt. He observed, in a cellar where beef had been salted, an efflorescence of what he considered to be soda, on the other side of a nine-inch brick wall.—*Phytologia*, sect. x., 7, 5.

186. If carbonate of lime and sea salt are mixed in the solid state, and a certain degree of moisture is present, carbonate of soda and chloride of calcium are slowly generated.—(Turner, 206.)

187. When ignited in contact with clay containing oxide of iron, the sodium of this salt *(common salt)* becomes soda, and unites with the silica of the clay, while the chlorine combines with iron, and is volatilised; on this decomposition is founded the mode of communicating the salt glaze to pottery. —(Graham, 454.)

188. When common salt is mixed with quicklime in compost heaps, it is deprived by the lime of a portion of its chlorine, and is partially converted into caustic soda (67). The action of the soda in this state is similar to that of caustic potash. Not only does it readily supply soda to the plant, to which soda is necessary, but it also acts upon certain other substances which the plants require (66), so as to render them soluble, and to facilitate their entrance into the roots of plants. To the presence of soda in this caustic state, the efficacy of such composts of common salt and lime in promoting vegetation is in part to be ascribed.—(*Johnston's Lectures*, lect. ix., p. 283.)

189. On a review of these facts it would appear that though a large and direct application of salt to land does not afford the prospect of much benefit, yet there are few instances of compost or the like, which would not be improved by a sparing use of this substance. It may be mixed with the water used to slake lime; it may be scattered sparingly among burnt or burning weeds, clay, &c. Sea weeds, too, might be burnt for manure: by all these plans more or less of soda would be disengaged, either in a caustic or carbonated state, likely to be very efficient in promoting the

decomposition of organic matter. But we are not to forget that potash, not soda, is the alkali most abundant in land plants; and though some physiologists are of opinion that the one alkali may be substituted for the other, it is believed, on the other hand, that an excess of soda in a soil impairs its fertility and injures the quality of its produce.

190. LIME—LIMING.—We have already stated at some length the chemical properties of lime, its hydrate, and its carbonates (52 to 74), and have referred (66) to some experiments of Dr. John Davy as adverse to the received opinion that lime in its caustic state favours the decomposition of organic, *i. e.*, animal and vegetable matter. We have described the use of lime in converting *carbonated* into *caustic* alkalies, and have stated that these caustic alkalies, dissolved in water, serve to decompose many substances not easily acted upon in any other manner (67). We referred also to the effect of lime in disengaging ammonia (68) from its ordinary combinations. We afterwards gave a rather minute account of Mr. Faraday's very singular detection of ammonia in what may be almost termed a *latent* state, in lignin, linen rags, &c., &c., where none could be expelled, even by heat, until water and lime, or alkalies in a caustic state were employed (164). Now large sums are expended every year by landlords and tenants in the purchase of lime, to be applied abundantly and profitably, no doubt, in most cases, yet in a careless, random manner, indicating utter disregard of all theory or scientific principle. But where is the theory? What are the scientific principles to guide the agriculturist? Perhaps teachers themselves may have something to unlearn on this important point.

191. In Professor Liebig's celebrated work is a remarkable chapter on the assimilation of carbon, in which it is proved to the satisfaction, it would appear, not merely of fallible men, but of quarterly reviewers, that "the quantity of carbon produced by manured lands is not greater than that yielded by lands which are not manured. The discussion as to the manner in which manure acts has nothing to do with the present question, which is the origin of carbon. The carbon must be derived from other sources; and as the soil does not yield it, it can only be extracted from the atmosphere," p. 15. We have quoted this passage before (49), but repeat it here, because, among the arguments adduced by the chemist of Giessen in support of his new views, there is one extended over many pages, constructed upon an assumed property of humate of lime, which is chemically unfounded—indeed the words in italics are omitted from the French translation.

192. "Let us now calculate the quantity of humic acid which plants can receive under the most favourable circumstances, viz., through the agency of rain water. The quantity of rain which falls at Erfurt, one of the most fertile districts in Germany, during the months of April, May, June, and July, is stated to be 17½lbs. Hessian, over every square foot of surface, &c., &c. If now we suppose that the whole quantity of this rain is taken up by the roots of a summer plant, which ripens four months after it is planted, so that not a pound of this water evaporates except from the leaves of the plants; and if we further assume that the water thus absorbed is saturated with humate of lime (*the most soluble of the humates*, and that which contains the largest proportion of humic acid,) then the plants thus nourished would not receive more than 300lbs. Hessian, of humic acid, since one part of humate of lime requires 2,500 parts of water for solution."

193. So far from the foregoing calculation being formed "under the most favourable circumstances," the very reverse is the fact, inasmuch as the humate of lime, instead of being the most soluble, is one of the least soluble of the humates; and, as a few simple experiments will prove, it is the property of lime not to render humus soluble, but even to separate it from some of its solutions. M. Liebig observes very truly that the humus of chemists has no existence in the soil. The humus of agriculturists is simply carbonaceous matter, of which peat affords a fair specimen.

194. *Experiment.*—Reduce some peat to powder; of this weigh a drachm into a half pint phial, fill it up with lime water and a little cream of lime; into a second phial put the peat, with a drachm of crystallised carbonate of soda and distilled water; into a third, water, peat, carbonate of soda, and lime: as these substances are not brought together in nature at any high degree of temperature, it is the fairest way of trying this experiment to set aside the three phials for a few days, shaking them now and then.

195. On examining these phials, we find the first, containing lime, peat, and water, quite clear—the water holds little or nothing in solution; the second, containing water, peat, and carbonate of soda, is a clear, deeply-coloured liquid, as dark as coffee—soda, we see, in the state of carbonate, forms with peat a strong solution, and if we had not been put a little on our guard by the result of our trial on the first bottle, we should expect perhaps that soda and lime together would afford a still stronger solution than the soda itself; a glance at the third phial will shew, however, that the addition of lime to the soda has impaired its solvent powers to a great degree, and by adding slaked lime gradually we can throw down every thing taken up by the soda. Lime, then, has the effect not of promoting, but on the contrary, of counteracting the solubility of carbonaceous matter, and it is very probable that the beneficial influence of this substance in agriculture arises from a property the reverse of what is usually ascribed to it.

196. Nor does the supposed effect of lime in promoting the decomposition of animal and vegetable substances appear to rest upon a more solid foundation of fact and experiment than its influence on solubility. The experiments of Dr. John Davy, already referred to, were conducted very fairly; they were published some years ago, and we are not aware that they have been controverted, or that his conclusions have been impugned.

197. It is not, then, by communicating solubility to humus, it is not by forwarding the decomposition of organic matters, that lime benefits the soil and promotes vegetation. We can form no safe opinion as to any physiological (5) process from the results of experiments upon inanimate matter in the laboratory; vegetables exert, during their growth, a vital power (5) far transcending mere chemical action; and we have no right to infer either that they do or do not derive their carbon from the earth, because some compound with an arbitrary name and imaginary properties, which we can mix in a bottle but cannot find in any soil, may be rendered soluble or the contrary by means of acids or alkalies. Whether the humate of lime

be the most soluble or the least soluble of the humates, is a point on which it is not very creditable for a chemist to stumble, but one which the practical agriculturist may view with indifference in the present state of his knowledge as to the food of plants. Yet to pursue the truth and to resent the perpetuation of error, is a moral obligation on the wise and good of every occupation. *Omnes enim trahimur et ducimur ad cognitionis et scientiæ cupiditatem; in qua excellere pulchrum putamus; labi autem, errare, nescire, decipi, et malum et turpe ducimus.*

198. We do not, however, insist upon any one-sided view of the action of lime, in pointing out the few principles which appear to result from the known chemical and mechanical properties of this useful substance. They who retain the common notion that lime is principally beneficial by promoting the solubility of carbon, and by favouring the decomposition of organic matters, will see the propriety of applying it to the soil at the time when growing plants are most hungry for their food. Those who adopt the opposite opinion will rather add lime to their fields at the dead season of the year, or will mix it with their composts of animal and vegetable matter for the purpose of preserving these unchanged, or nearly so, until they can be conveniently incorporated with the soil. The distinction is not unimportant: but we leave this question to be decided by practical men, in the expectation that the more correct view will prevail.

199. Lime ought not to be much exposed to the weather in heaps upon the field (63); the best, at least the strongest, lime water is found to be that extracted by the first water poured upon it. This seems owing to the presence of some caustic alkali, either derived from the lime itself, where modern chemists say it may frequently be met with (*Comptes rendus xii.* 850), or possibly the water employed may contain some common salt or other saline ingredient, capable of being decomposed, when the slaking of the lime is attended with much disengagement of heat. A few pounds of salt for every bushel of lime may, probably, be economically mixed with the water employed (188). At all events, it is desirable that the lime should be rapidly slaked, and converted into a hydrate, by just enough of water to reduce it to fine powder. It acquires now a great attraction for carbonic acid, and rapidly loses its caustic state. If allowed to be soaked in water, it becomes a kind of mortar, growing harder and less soluble every day. In order to prevent this change, by which the lime would remain unprofitable for many years, the hydrate, or powder, should be spread forthwith over a large surface of land. But wherever vegetable mould, peat earth, peat ashes, or burnt clay, can be had in sufficient quantity to make a compost, the addition of hydrated lime, one part to ten or more, would insure the complete division of the lime and a considerable amendment of the other materials. It is a mistake to suppose that the durability of improvement is proportioned to the quantity of lime applied to a particular field. It may easily happen, on the contrary, that an excess of lime may rob the soil prematurely of its alkaline or azotised materials, and even render its carbonaceous matter long insoluble and unproductive. Of lime, as indeed of every other addition to the soil, the frequent, sparing, well-timed application over a large surface must insure the most certain and early return of the capital employed.

200. The hydrate of lime (55), when added to a salt containing ammonia, has the property of uniting with the acid, and disengaging the ammonia in a caustic state (82, 83). The ammonia being very volatile flies off in pungent vapours, and on this account it is considered injudicious, on general principles, to mix caustic lime with strong ammoniacal salts, or with decomposing animal matters. But if such substances are covered well and mixed up with a large proportion of carbonaceous materials, or if the lime be previously much reduced by any suitable compost of burnt clay, &c., it may be incorporated with salts, &c., containing ammonia, not merely without loss, but frequently with considerable advantage. For reasons, however, which Liebig's masterly observations on the subject of fermentation, decomposition, &c., will abundantly explain, the only truly economical mode of using substances highly azotised and prone to decomposition, is to apply them as ferments to inert carbonaceous matter, as decayed leaves, peat, tanners' bark, &c.

201. When we treat of gypsum we shall inquire whether that fertilising substance might not be obtained by the addition of slaked lime to shales abounding in pyrites, which are very frequent in many districts.

202. Certain kinds of limestone are found, when burnt, to yield a lime which hardens under water; this property may be communicated to common mortar by the addition of some ingredients of no great cost. And by proper management, mortars may be made to bind gravel and sand together into an uniform stony mass capable of withstanding the attacks of frost and every kind of weather, and so strong as to sustain the weight of heavy carriages. Even bridges have been constructed on these principles, promising all the strength and durability of substantial masonry, at a very reduced expense. Indeed, some of the finest ancient structures are found to have been built in this manner. Much light has been thrown upon this curious subject by the researches of modern chemists, from whose remarks the agriculturist might draw important conclusions. From the construction of bridges it was an easy and natural descent to the fabrication of draining tiles; and so far as the mechanical process is concerned every difficulty seems to have been overcome (See the *Farmers' Magazine*, May, 1842, page 371, on Lord James Hay's drain tile). Now it is very likely that this mode of draining will ultimately prove of great advantage in some districts, and utterly fail in others, from one of two opposite causes. Whereever the water issuing from a soil abounds in carbonic acid gas, the calcareous matter of the tile will be liable to fall away, dissolved as we see it corroded in time from the face of the hardest rocks and most polished marbles. (64. 70). Secondly, lime when brought in contact with solution of vegetable substances, or of salts containing iron, soon forms bulky insoluble deposits (195), which must block up the concrete tile drains. But the most important inference to be drawn from a consideration of the subject, is the hard, durable, refractory nature of the concrete itself when the negligent agriculturist allows it to bind together in his soil, by want of attention to the chemical properties of lime.

THE FRENCH SYSTEM OF FARMING AND PEEL'S TARIFF.

TO THE EDITOR OF THE HEREFORD TIMES.

Sir,—The French farmers, at haymaking, stack their hay in the field, about three cocks to the acre; if got ever so well, they allow it often to stop several weeks, until often damaged by weather; and then, instead of doing as we do, hauling it and putting it in large stacks, they tie it up in 12lb. bundles, and put it in large buildings to serve their horses and cows for the year. Part of this management I consider good, and part bad; they allow each horse, for 24 hours, a bat or bundle—12lbs. of hay, or sanfoin, or lucerne, which is grown on their arable land; they allow two bats or boltins of straw, about 24lbs., with a bussan of oats for each horse; this quantity is little more than one English imperial peck. They do not cut the straw into chaff, but put it into the rack, and the horses pick out the best of it, such as the ears and softest part; the rest goes under them for litter. Now my belief is that our agricultural horses in Worcestershire and Herefordshire consume and waste 84lbs. of hay in 24 hours, which distends the stomach and causes much flatulency, so that our horses cannot move or labour with the French horse. It has been allowed that the French Norman horse, fed in this way, possesses much muscular power, and more indeed than our breed of horses. In fact, I believe that if our horses worked the same number of hours as the French horses do in farming work, and lived as we farmers keep them in England, they would die with *fatigue*. I have often told some of my John Bull neighbouring farmers that we were a century behind the French in horse labour and their general management of horses, and also that they did better than we in working their horses abreast at their ploughs.

I once went with an English farmer to look over an estate which he was desirous of taking; it consisted of 500 acres of land, with an excellent farm-house and buildings, and walled garden, and fit for the residence of a gentleman, situate within six miles of Orleans, and sixty from Paris. 400 acres of the estate were under the plough, under a four-course system; 100 acres under fallow for a year for oats, then clover, then oats again, and the last crop wheat, which was as good as I ever saw upon our best cultivated farms in England, without a bit of filth upon the farm, which I attributed to the climate. There they have more sun and more frost, which makes the strong land in France the best, except the best deep loamy soils. Suppose this farm had planted 50 acres of vetches, and had 50 acres of Swedes and turnips, for 800 sheep, instead of the half-starved flock of 500 sheep I saw upon it, look at the mutton and beef which would be made on it. The same remark applies all over France; and now they have got a market, if they farm upon our turnip system, they will soon supply Sir Robert's manufacturing friends with butcher's meat cheap, and will be the cause of reducing our land to half the present rent, the same price the Frenchman gives. This Orleans farm was 12 francs per acre, with no other expense but labour, viz., nine strong stallions did the labour upon 400 acres of arable land—three 3-horse teams, two abreast and one before, unicorn fashion, drawn with cord reins. To break up the first time, they plough two hectares a day each team, which is equal to two of our English acres all but four perches; the second and third ploughings are done with pair-horse teams, and a play horse, unless harrowing is to be done. Labour upon the farm is about the same as in other parts of France, a franc or 10d. per day, except the three carters and shepherd, who are expensive men, having nearly double labour to perform; each of these men has a certain quantity of labour to do, for which the head or first carter receives 400 francs, 16*l.* sterling; the second 350 francs, 14*l.*; the other 300 francs, 12*l.*: they are compelled to be at their ploughs by four o'clock in the morning in the summer, and return to the stable at eleven o'clock, feed their horses and themselves, and rest horses and men until two o'clock; the men having each a comfortable clean bed with curtains in the three recesses in the walls, behind their horses, where they rest themselves the three hours, and sleep by night; they return to their ploughs, and stop in the field until eight o'clock: this labour was regularly done every day except bad weather prevented it. Their ploughs are long ones, similar to our vale ploughs, with long wooden shilboards, there being but little iron in them, as iron is more expensive; they turn a good deep furrow, rather wider than we generally make. I was delighted to see these three men manage their horses, and the pace they walked was quite as fast again as our four and five-horse teams go upon our clay lands. The arable land on this farm was open, consequently the horses had no hedge to turn against, but a piece of corn or artificial seeds, and not a foot was allowed to be trodden upon, or dreadful punishment followed, with a hearty *sacre*. They are terrible fellows to punish horses, in fact; were they not severe, they could hardly manage three fine healthy stallions together.

This gentleman gave his shepherd 500 francs (20*l.*) per annum, but he is never from his sheep, day or night. In the summer the sheep are tended upon the fallow land, or feed by day with his two faithful wolf-dogs—the best in the world for their work; at night they are folded in a large pen upon the fallows, the shepherd sleeps in his bed in a sort of cart; and his two trusty servants, his dogs, guard his charge from the visit of the wolves, with which most parts of France abound. The wheelwright keeps the carts, ploughs, and harrows, with wooden pegs in them instead of our iron tines, which seem to answer well; and his blacksmith keeps his horses shod, and his carts and ploughs in repair—all at a fixed price; the saddler or collar maker the same; so that the farmer knows exactly what the annual expenses are upon his farm when he takes it. The labourer pays about 30 francs a-year for his cottage, and is never called upon by the tax-gatherer to pay a farthing; his *sabots* or wooden shoes cost 5 sous, or 2½d., his Sunday or holiday shoes cost him about 4 to 5 francs (3s. 4d. to 4s. 2d.), which the poorest labourers will soon have here. I forgot to mention that no such things as waggons are used in any part of France; they keep dung-carts, and long hay and corn carts; the latter, which are longer than our waggons, will carry more, and are roped or bound in a quarter of the time we are doing the same in a waggon. They always put the strongest horse in the shafts, having the hardest work; we English put the smallest, progressing in size until we come to our fore horse, often 17 hands high, a regular peacock team. Some of our agricultural friends will say, if the lowest horses are put foremost, they will be drawing the horses behind them down; but Frenchmen are good judges—they make every horse draw separately, yet from the same draught, the axletree; their carts are so well balanced,[*] that even where I have seen 4, 5, and 6 tons of building stones in Paris upon one pair of wheels, there have not been half a cwt. upon the horses' backs; and when they go down hills they use a moveable lever to throw the weight forward, and reverse it when going up hill. There is a winder or roller with a cord each side the cart, which guides their loads down the hills safe.

I visited many large farmers when I was in the country, some having from 500 to 1000 acres of land, and I made every enquiry to ascertain their expenses in their farm implements; and from what I could learn, they did not pay so much for their dead stock upon their farms by at least 75 to 100 per cent. as ours cost, timber being cheap; and they grow their own hemp, of which they make cheap ropes instead of traces, which will last for two or three years. Our blacksmiths and wheelwrights' bills are ruinous to the English farmer, and I hope to live to see waggons thrown by as uselessly expensive and cumbersome machines. If they are better than carts, why do not the clever Scotch farmers use them?—for a good reason—four horses and two carts will do half as much more work on the farm or road than waggons. I believe England is the only country in Europe that makes use of them, yet it is said that the Scotch farmer gets his labour done cheaper than we English do; and it is well known that if a Scotch farmer takes a farm in England, his expenses ruin him, from being compelled to farm like his neighbours, for no one will fall into his Scotch plans of working his land; but, if I am not mistaken, Sir R. Peel's new tariff laws will oblige the English farmer to lower his expenses in his costly implements and machinery, and he will still do his farm quite as well. There should be premiums given at our agricultural societies for those that drive their horses abreast, or unicorn fashion; then our ploughmen would try to get out of their grandfathers' bad habits.

R. WINNALL.

Croft, Mathon, May 28th, 1842.

BLOFIELD AND WALSHAM FARMERS' CLUB.

This was among the earliest of the Associations under the above title. Similar institutions now in existence throughout the country give an indication not to be mistaken, of the social and enquiring spirit which now pervades all classes of the community, and which, in the present instance, needs only co-operation and encouragement to be the means of beneficial and important results.

The Blofield and Walsham Farmers' Club has attained a high degree of prosperity, which it owes in a great measure to the assiduous exertions of its President, Mr. Baker, and the zeal of its able secretary, Mr. Ward, both resident in Acle. It has been joined by the principal gentry and clergy of the hundreds, and additional interest has been lately given to its proceedings by a lecture, which was delivered last Thursday, June 9, to the members of the club and their friends by the Rev. E. Sidney. The subject was *Nitric Acid and Ammonia with especial reference to Agriculture.* The audience included Sir Edward Stracey, Bart., the Rev. T. Beauchamp, the Rev. George Hoste, and several other clergymen, and a numerous and most respectable body of yeomanry.

With a neat and simple chemical apparatus, Mr. Sidney commenced by exhibiting the different properties of oxygen, hydrogen, and nitrogen. He decomposed and recomposed water, shewing the chemical combination of hydrogen and oxygen in that fluid, in the proportion of two to one in *volume*, and one to eight in weight, and then proceeded to explain the mixture of oxygen and nitrogen in common air. After this the different combinations of nitrogen with oxygen, forming *oxides* and *acids*, were illustrated by various experiments of a pleasing and striking character; the last touched upon was nitric acid, consisting of one equivalent of nitrogen to five of oxygen. The Rev. lecturer then went on to shew that ammonia was a chemical combination of nitrogen with hydrogen, consisting of one equivalent of the former, united with three of the latter. By mixing sal-ammonia (or hydrochlorate of ammonia) with unslaked lime, the former became volatilized, and was collected by Mr. Sidney in a glass vessel. Another containing muriatic acid gas was then placed under this, when to the admiration of those present the ammonia again became fixed in an instant. Mr. Sidney observed, that the powers of chemistry were inadequate to unite nitrogen and hydrogen so as to form ammonia, but that it was formed in almost all *reactions* when these two gases were in a *nascent* state. He gave as instances its production by an electric spark traversing damp air—in the decomposition of organised substances, and in their distillation—being also a product of organization, appearing in the perspiration of animals and the exhalation of vegetables. Formed by the tempest in the atmosphere, it was fixed by the carbonic acid in the air, and on account of the extreme solubility of all its salts in water, was thus carried into the soil in a state fit for absorption by the roots of plants. Mr. Sidney remarked that it was absorbed by porous substances—charcoal, burnt clay, &c., and that on their possession of this power depends their importance in agriculture. After proving by tests the alkaline properties of ammonia, the lecturer explained its existence in the refuse of the habitations of men, and found fault with the general and heedless waste of so valuable a substance. He propounded various methods of correcting this error, and showed how large an amount of nitrogen would be derived from the ammonia thus saved. *Albumen, gluten*, and other important products were stated to be dependant upon the amount of

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[* The balance in the build and the loading appears to be much more attended to in Manchester, Liverpool, &c., where the weight of a cart, independently of its load—both cart and load rarely drawn by more than two horses, oftener by only one—would astonish many of our agriculturists. The wheels of these uneven and heavy but nicely balanced carts, are considerably higher than those in use in this part of the kingdom. Moreover, the carters are very cautious not to allow the shafts to stand a moment without putting down the rester. How often, on the contrary, do we see a horse in the shafts of a cart with a heavy load, standing or rather moving uneasily, his driver quite regardless of his uneasiness.—E. H. T.]

nitrogen absorbed by plants; and the remark was made, that for *every* pound of ammonia wasted, *sixty* pounds of corn were lost. The value of woollen rags as a manure next came under consideration, and that it was very considerable was inferred from the fact that 3lbs. of these contain more nitrogen than 100lbs. of ordinary farm manure; the best method of applying these was said to be in the form of *singeing*. The statements of Liebig respecting gypsum were regarded by Mr. Sidney *as not proved*, though he did not *dispute* their correctness; but he expressed his belief that the variable effects of this substance in different soils were contingent rather on *solubility* or insolubility than on the causes to which they are ordinarily assigned. Nitric acid was shewn to ascend by the roots of plants, and to be decomposed by the leaves—they emitting oxygen, while nitrogen became assimilated in the tissues—nitric as well as sulphuric acid having the power of changing *starch* into matter bearing the character of woody fibre, and new chemical compounds being formed where hydrogen abounds. After recommending that one-third of *sulphate* of soda should be added to *nitrate* of soda, where the latter is employed as a top-dressing for potatoes, Mr. Sidney concluded the lecture by explaining the natural formation of nitre and nitre beds, and giving directions for the formation of compost heaps. The layers of chalk, crag, or marl, should be taken from shaded spots, mixed in alternate layers (of four or five feet deep) with the decomposing vegetable or animal matter, and well watered with water drained from manure, or salt and water mixed with *unslaked, not quick* lime, the whole being allowed to remain undisturbed for at least a year. The lecture, of which this is a very imperfect sketch, was listened to throughout with deep interest. It is scarcely necessary to say that it was eloquently delivered, or that the experiments were skilfully performed, and the illustrations brilliant, since so many of the inhabitants of this portion of the county have been at different times among Mr. Sidney's hearers; and no small number of them attended his last winter's course of scientific lectures, in which these excellences were conspicuous. The lecture was mingled with those religious and pious allusions by which the Rev. Lecturer frequently recalled his hearers to the Great Giver of all; and at the conclusion he was greeted by the hearty plaudits of his gratified auditors.

Sir E. STRACEY, before the company separated, expressed in warm terms the high satisfaction which he had derived, both from the lecture of his excellent friend, and from witnessing the desire to acquire knowledge in a class of persons whom he valued and esteemed. Mr. Sidney deserved the thanks of the country, and he for one cordially thanked him. The hon. Baronet's speech was much and deservedly applauded.

WATTON FARMERS' CLUB.

THIRD ANNUAL REPORT.

In presenting the third annual report, your committee cannot but express their pleasure in announcing that the society continues to maintain its number of members, but they at the same time are compelled to admit that the attendance of those members has been anything but satisfactory, as the report of the several monthly meetings will but too truly show; they are, however, willing to hope that on entering another year they will give a better attention to the business of the club, so as to bring together a greater amount of evidence on disputed points of agriculture than they have hitherto done, that when we arrive at this period another year, we may have settled those points, and have gained the great object for which we conceive farmers' clubs were instituted: whether we succeed in that object or not, we are confident that much good arises out of these meetings, and it has often happened that a simple fact stated there, which did not excite much attention at the time, has afterwards been turned to good account.

Your committee therefore do hope that members will in future give a little more time and attention to the business of the society, without which it is quite impossible that it can be carried on successfully. They trust to be excused this digression, but cannot resist the opportunity afforded them of stating their opinions thus freely. Without further preface your committee will proceed to notice the several meetings during the year; the first of which was as usual dedicated to receiving the report of the previous one, and which was read and unanimously passed.

JUNE 2ND, 1842.—The recommendation of the committee in the last year's report, "to procure a room for depositing the books and to cause the leading agricultural newspapers to be taken," was first taken into consideration, and after some discussion was negatived, and the following resolution carried—

"That two market letters be taken weekly and exhibited in the market room every Wednesday." And which resolution has been carried into effect.

A discussion then arose on the best means of escaping the ravages of the "turnip fly;" from which it appeared that no one could offer any remedy, and the only plan recommended was, to have the land in as high a state of cultivation as possible, and to sow plenty of seed.

It was also stated that where land was folded with sheep or sown very early, the fly did not do so much damage as where yard manure was used.

This was the substance of the evidence obtained on this important subject, but your committee on considering this matter are of opinion that the scientific enquirer might be able to deduce some remedy from the above fact, that the fly does not in so great a degree attack the plant on land previously folded with sheep; could such a theory be borne out by practice it would be a most important discovery, and confer incalculable benefit.

The meetings of the club were then adjourned to

SEPTEMBER 29TH.—When a most important subject was taken into consideration, viz., "the compulsory cultivation clauses in leases."

In introducing this subject, the mover said that it was one which had of late excited much interest not only in this but in many of the farmers' clubs in the country; it was one to which he had turned his attention for some time past, but always found difficulties in the way of framing a plan to meet the views of all parties. He hoped by bringing it before the club, it would meet with the attention it deserved, and be discussed fairly; and thus show that it was not the intention to infringe in the least on the just rights of the landlord, but to place before him such facts as would show it to be beneficial instead of injurious to his interest to grant a modification in some of the clauses usually inserted in leases. It was owing to his inability to grow turnips and layer as formerly, that induced him to bring the subject forward; and he expressed his conviction that if the tenant was allowed to grow a certain extent of beans or peas after barley instead of layer, it would be very beneficial, and a greater probability of obtaining a good layer next time: the same would apply to turnips by sowing peas after wheat. He was disposed to go still further, and take a crop of oats after wheat, by which means turnips would not come so near and would be better; he considered turnips were sown too frequently, and that after spending a large amount of money in manure of various kinds the result was a failure of the crop. It was to obviate this that he made this proposition to the meeting, but he was of opinion the tenant should return to the four-course the last four years of his term. He would say in conclusion, that he was allowed the above privilege on his occupation (except the one taking two white crops), and found it to answer well, and the land in no way deteriorated.

Another member stated that he was allowed to make an alteration in the system he formerly pursued, and found great benefit by so doing; it was to take one-eighth of the wheat stubble and sow with beans instead of turnips, and one eighth of the barley stubble with beans instead of layer; he found the succeeding crops of barley and wheat good after beans.

Another said he had liberty to farm as he pleased the first eight years, but to return to the four-course the last four; but he had not availed himself of more than the gentleman who spoke last, and which mode he recommended.

Another said that, were he a landowner, he should be very cautious who he trusted with such power as that mentioned by the last speaker. He considered that some system should be defined in all leases for the satisfaction and mutual understanding of both landlord and tenant, but at the same time he thought some alteration was necessary in certain cases, and that it was too frequently the case that leases were drawn in the same way for land of a very opposite character.

Then came the statement of a light land occupier, who said he had heard much that evening about taking two successive crops. He found his corn crops came too fast, and is obliged to let his layers lie two years. Another lets his layer lie two years and takes up one-third of the two-year layer and sows with turnips.

Several others delivered their opinions, but with little variation from the foregoing statements, and the meeting ultimately agreed—

"That sufficient cause has been shown for a deviation from the four-course system in certain cases, but where turnips and layers can be grown with any degree of certainty that it is not necessary to alter such course. Where such alterations are required, it appears to this meeting that the best system to be adopted on heavy land is to sow one-eighth of the wheat stubble with beans instead of turnips, and one-eighth of the barley stubble with beans or peas instead of layer. On light land it is recommended to let the layer lay two years, and to take up one-third of it and sow with turnips. Whilst coming to this conclusion, the meeting wish it to be expressly understood that it is not their wish in any way to infringe on the just rights of the landlord, but that he may know it would be an advantage not only to the tenant, but also to himself and the whole community; for nothing is more desirable than to increase the growth of corn in this country."

The committee has great pleasure in reporting that several gentlemen present have had extensive modifications in their leases, which shows that a just and liberal spirit is diffusing itself, and they trust will continue to extend.

October 27th.—Your committee regret to report that no meeting took place in consequence of the non-attendance of members.

November 24th.—The annual exhibition of roots took place this day, and the judges awarded as follows—

Long yellow beet ....Mr. John Tingey, Scoulton.
Long red beet ......Mr. Barton, Threxton.

There were no turnips shown, which indicated the great deficiency in that crop this year; and in the evening a discussion arose as to which was "the beast mode of keeping ewes when the turnip crop is deficient."

The member introducing this subject, said that in common with most of his neighbours he had the misfortune to have a very bad crop of turnips, which obliged him to devise other means of keeping his sheep; and the plan he had adopted was to cut straw (having also a deficiency of hay), and half a pound of oilcake per sheep per day: such was the plan he was pursuing, and his object in bringing forward the subject was to hear if any better mode could be adopted, and if not, he would try this, and report the result to the club hereafter.

Others mixed bran or corn instead of oilcake, and some cut hay only, but it was particularly recommended not to give breeding ewes mouldy hay, which has been found very injurious to them, though it does not appear that there is the same objection to giving it to hoggets; it was found to be highly advisable to keep rock salt with all sheep.

It was ultimately agreed that this subject should be adjourned to the April meeting, that that gentleman might further report how they proceeded during the winter.

December 22nd —"On converting old pasture and heath land into cultivation."

On this subject but little evidence was offered: it was brought forward by a gentleman who was about to break up an extensive warren, and his object was to elicit information as to which was the best way of proceeding, whether by simple ploughing or paring and burning; and although a discussion took place upon it, no one was present who had sufficient experience in breaking up such land to offer an opinion, but several others were, like him, about to commence similar operations. It was adjourned to the November meeting, when the mover stated it was his intention to report the result of his experience, as he intended to try a variety of experiments.

January 26th.—Your committee are again compelled to report that no meeting took place in consequence of the non-attendance of members.

February 26th.—John Weyland, Esq., presented Liebig's Agricultural Chemistry, and the best thanks of the society were voted him for the same.

"The best method of preparing land for barley" was then brought under notice; and after some discussion, in which the prevailing opinion was in favour of skeleton ploughing close after the fold on light land, by which means the tathe was kept from the wasting influence of the atmosphere, and couch grass, where any existed, was easily eradicated. It was the opinion of the meeting that on such land two ploughings should be given, but on heavy land it was deemed advisable not to plough more than once.

March 23rd.—Your committee are once more obliged to report non-attendance of members, and consequently no meeting.

A meeting of the committee was then summoned to devise such means as they might deem necessary to secure a better attendance in future ; after taking the matter into their consideration they thought it advisable to call a meeting of the whole society, and ultimately passed the following

Resolution.—" That the secretary be requested to write to each member of the club to beg their attendance at the next meeting on special business relating to the affairs of the society."

April 20th.—The foregoing resolution of the committee was first taken into consideration, and it was unanimously agreed that every exertion should be made to secure a better attendance in future, and to which your committee bear testimony was the case at this and the following meeting.

Top-Dressing Wheat.—In introducing this subject to the notice of the meeting, a member stated he had some experience in various dressings, and he found that soot was generally successful ; he had found saltpetre, and also nitrate of soda sometimes so, but he considered both of them uncertain in their effects ; and whenever used he advised sowing at two or three periods, as it then had a less tendency to mildew than when sown all at one time. One gentleman had one coomb of wheat per acre increase from using one cwt. of nitrate of soda, but it was not so good in quality. Another had tried a variety of top-dressings, but could see little or no difference except in that sown with maltcums, and which was much better than the rest ; but he admitted they cost more than any of the others.

Another trial was with carbon, nitrate of soda, and *nitrate of soda and rape cake mixed ;* the mixture was found much better than any of them separate.

Another plan, was found very successful, although not coming strictly under the denomination of top-dressing ; it was to sow one-third of a ton of rape cake per acre on the layer at Michaelmas, ploughing it in ; much greater benefit was found from this method than sowing it in the spring *on the wheat.*

Most of the members present were favourable to using soot, more especially where game abounds, it having been found by experience to be the means of preventing much damage to the crop. Upon the whole the result of the discussion shews that rape cake was the most certain in its effects ; and it was clearly shown that artificial means, and that to a great extent, must be resorted to, so as to increase the produce of the country in the same ratio with our rapidly increasing population. The meeting then passed the following

Resolution.—" That rape cake is decidedly the best artificial manure for wheat that has been brought before the notice of the club."

A member then gave notice that at the next meeting he should move that Rule 11 be altered so as to admit of taking into consideration any matter pending in either House of Parliament affecting the interests of agriculture, and the secretary was requested to communicate the same to each member of the society.

May 18th.—The gentleman who gave the above notice being absent, and no one present moving its adoption, it consequently fell to the ground.

The adjourned discussion on keeping ewes was then resumed, and all present agreed that when a scarcity of turnips prevailed, the best substitutes were cut hay with a small portion of straw, but when short of hay, to give either half a pound of cake, or one pint of oats or barley per day ; when sheep have been thus fed, it has been found that the succeeding crops are best when the cake was used, and it is therefore confidently recommended.

It also appeared there was less loss of ewes in lambing when a portion of any of the above mentioned food was given in addition to the turnips, and highly recommended that not only when a thin crop of turnips prevailed, but at all times such food should be given. By pursuing such means a greater number of sheep may be kept on the same ground ; that being the opinion of the meeting, a resolution was passed agreeably thereto.

Your committee in closing this report again intreat members to be more prompt in their attendance, and they are sanguine enough to hope that will be the case, for they are of opinion that the time is arrived when farmers' clubs are calculated to do more good than at any previous period. On looking around it will be found that rapid strides are making in every department of arts and science —every day brings forth some new invention to cheapen the cost of production ; and with this before our eyes we must not be content to stand still and look on, but must apply ourselves to our department, lest we be left behind in the great race of improvement. It has been said that that man who made two blades of grass grow where only one grew before was a greater benefactor to his country than the greatest politician ; let us therefore follow out this maxim, and endeavour to increase our produce. True it is that we have daily brought before our notice some new manure, and which is said to be most beneficial, but on comparative trials they are often found very deceptive ; and it is by means of these clubs their effects on the various soils are proved and made public. The formation of farmers' clubs are like so many experimental farms, and your committee have the pleasure to state that many reports continue to be received from other clubs, by which means the result of the various manures used in several districts can be compared ; they anticipate the most beneficial effects from this interchange ; and in conclusion venture to hope that farmers' clubs may long continue to meet with that support which they consider such institutions so well deserve.

For the committee,

Thos. Barton, Secretary.

SINGULAR CHIEF RENTS.—Some curiosity has been excited respecting an advertisement in this paper for a sale of property in Over Alderley, *inter alia*, of " two annual chief rents belonging to the demesne ; the one of a pair of gloves and 8d. payable by Lord Stanley, of Alderley, for a farm called Shaw Cross ; the other of a red rose, payable by Thomas Brocklehurst, Esq., of the Fence, for a farm called Fitton Town." A correspondent has furnished us with the following particulars :—On the 19th of August, 1612, Francis Fitton, of Over Alderley, yeoman, came to the house of Francis Acton, in Over Alderley aforesaid, and then and there paid and delivered unto Thomas Acton, son and heir of said Francis, one red rose, for the use and behoof of said Francis, in lieu of a chief rent which the said Francis Fitton should have paid at Midsummer then last, for his lands in Over Alderley, which he confessed he held of the said Francis Acton. And, again, on the 25th June, 1688, Robert Norbury, of Over Alderley, yeoman, came to the capital messuage of Samuel Acton, in Over Alderley, and there delivered unto George Massey one red rose, for the use of the said Samuel, in lieu of a chief rent payable yearly on Midsummer-day, for his lands in Over Alderley, which were late the inheritance of Francis Fitton, being always acknowledged to be holden of the said Samuel Acton, and his ancestors. On the 14th August, 32 Charles II., a fine was levied between parties therein named, of (*inter alia*) "one pair of white gloves and eightpence rent, in Over Alderley."—*Macclesfield paper.*

ON THE USE OF THE GREAT OR JERSEY TRENCH-PLOUGH,

EXHIBITED AT THE SOCIETY'S ANNUAL MEETING AT LIVERPOOL, IN JULY, 1841.

By Colonel Le Couteur.

(From the Journal of the Royal Agricultural Society of England).

I should not have ventured to invite the attention of this great society to the Jersey trench-plough, had I not given much consideration to the subject, and observed that in many parts of England and Scotland, where the cultivation of root crops is so much practised, the crops are not so heavy as I consider they might be under an improved system.

I attribute, in a great measure, to the deep ploughing in Jersey the very heavy crops of potatoes, parsnips, carrots, and wheat that are raised; perhaps also the deep ploughing leads to the very large crops of hay and after-grasses that are grown there by ordinary farmers.

It is presumed to be correct to say that as nearly as farm husbandry can be assimilated to garden culture, ever keeping in mind the farm account, or working in the best manner at the least expense, the more likely are we to raise not only heavy but clean crops.

If this position be a correct one, it is absolutely necessary to call attention to the fact that the best market-gardeners, who are found in the vicinities of cities (take London and Paris, for instance), practise deep husbandry, or *trench* with the spade. If a man finds a shallow soil, he is seen to deepen it, not alone with his spade, but with a mattock or pickaxe.

I have seen beautiful celery, parsnips, carrots, and potatoes, raised on almost pure sand, with a little earth trenched in at bottom, and a good dressing of manure between the sand and the earth.

It is scarcely necessary to quote many authors in support of this opinion. I will merely bring to recollection that Mawe, Sinclair, Loudon, and other English writers, observe that "the merit of trenching in general is superior to plain digging for many principal crops, or any plantations, as with the top soil all weeds and dung are more effectually BURIED in the bottom, and the fresh soil below more readily turned to the top, which is of considerable importance in the growth of all seeds and plants."

Sir John Sinclair states, that "considerable tracts of waste lands have been rendered capable of regular cultivation by trenching."

The French writers, Du Rozier, Dombasle, Vilmorin, Noisette, speak in this sense, that digging is not simply the mere stirring of the earth with a spade, as is practised with inexperienced cultivators, or labourers more interested to display a large surface of work than careful to have performed it well. Masters often judge of work by its extent, hence it is easy to comprehend that in such cases labourers think of little else. In order to work the soil well, it must be turned to a depth proportionate to the length of the roots which are to grow in it, whether they be sown or planted; meaning that if the roots are to be six inches long, the soil should be worked at least from nine to ten inches.

If these opinions of the best authorities in the most civilised countries are correct, the general working of soils for ordinary crops is not sufficiently deep throughout the United Kingdom.

I am aware of the delicate ground on which I am stepping, of the prejudice which long practice, much consideration, and science itself has established—science, in one sense of the word, when compared with the dark state in which agriculture had remained up to the days of Tull and Sinclair, those parents of modern husbandry; but the most scientific farmers now admit that we are still infants in the knowledge of the soil—the chemistry of agriculture unfolding its wonders under the mighty lights of Davy and Liebig. The botany and entomology of husbandry, revealed to us by Kirby, Bauer, Henslow, Lindley, and others, show us how much we have to unlearn, and how much more to learn.

A deeply reflecting mind may perceive that the intelligence and observation of acute persons, among men considered to be mere ordinary farmers, have led them to adopt nearly correct courses of husbandry, after perhaps a quarter of a century of reflection, including merely the experience of four rotations of a six-course shift, or six of one of four courses; in truth, a short experience to build a system on, which profound sagacity alone could even approach to establish. Under the light of science, correct rotations may now be followed with certainty, the analysis of a soil pointing out its wants and capabilities.

The trench-plough will only suit soils that are turned to the depth of eight or ten inches at least, and can be turned eighteen inches or more. The object of proposing the use of this trenching-plough is twofold:—1st, To compress three or more ploughings and harrowings, spread over a whole fallowing season, into two ploughings and harrowings, hence effecting a saving of much labour, and the use of the soil one season. 2ndly, To increase the weight of all the subsequent crops.

"The practice in many parts of England is, according to Loudon, in usefulness and effect very different from what it ought to be. In most places the first furrow is not given until the spring, or even till the month of May or June; or if it is given earlier, the second is not given until after midsummer, and on the third the wheat is sown. Land may rest under this system of management; but to clean it from weeds, to pulverise it, or to give it the benefit of aëration and heat, is impossible."

The practice of the best farmers of the northern counties is very different. Loudon then describes what a proper fallow is:—"Invariably commencing after harvest by one ploughing, as deep as the soil will admit, even though a little of the till or subsoil is brought up: this is the winter furrow." He afterwards describes four ploughings and harrowings, and the mode of collecting the couch and other weeds, with a view to destroy them.

In Professor Low's very excellent recent work, "The Elements of Practical Agriculture," at the article "Fallowing," "five and in some cases six ploughings, with frequent harrowings and rollings, are to be given between the winter furrow and the month of August, when the dung is carried on the land and ploughed in." Here is a sixth or seventh ploughing, and lastly the seed furrow; in some cases eight ploughings, unquestionably an enormous expense, when added to the loss of the rent of the land one whole season.

The seeds, usually of wheat, are then sown, but it is added in the following page—"This is precisely the management pursued in the case of turnips and similar fallow crops, so that when the learner comprehends the operations of the summer fallow thus far, he is acquainted with the manner of preparing the land for an extensive and important class of plants."

If by any process of husbandry the same result could be obtained from a culture for fallow or root crops of five or six months and only two ploughings, which is now obtained from this long operation of four to eight ploughings, spread over a period of ten months, it surely would be desirable and profitable.

No such thing as a fallow is known in Jersey, where from 112*l.* to 160*l.* is a common price for an acre. A farmer would be ruined if his land lay idle a whole season: the trench-plough is his sheet-anchor.

An able writer in the "Georgical Essays," describing it in 1781, or thereabouts, observes, "It was first invented and practised by an intelligent farmer, about fifteen or twenty years ago. This plough, not yet sufficiently known, is of the greatest utility either for grubbing up the ground or ploughing deeply inwards, either to establish nurseries or plantations. The inventor deserves everything from his country and from mankind. If he had lived in an age wherein merit and talents find protectors and encouragement, he would have received a reward for the invention of a plough which is, and ever will be, of universal utility."

In most cases, in the month of October or November, a skim-ploughing is given to an old or two years ley, which is left exposed to the winter frosts. It is well harrowed and cross-harrowed previous to carting out the manure, which is spread on the ground at a rate ranging between twelve and twenty tons per acre.

In some cases the above previous skim-ploughing is deferred till January or February, in order to allow cattle to feed off any herbage that may be left on the land, so that the two ploughings now to be described take place in the same month.

A short time (the shorter the better) previous to putting in the crop, the land receives its second and generally last ploughing. The trench-plough then comes into play, preceded by its pioneer, the two-horse plough. A trench is opened through the middle or length of the field in this manner:—The two-horse plough is made to cast off a furrow up and down, so as to assist in forming the trench; the trench is then neatly sunk eighteen inches deep, more or less, according to the depth of the soil, and squared off two feet wide with spades, the earth being thrown off to a distance on each side.

A man with a spade should then be placed at each end of the furrow, to dig and square it out half the length of the trench-plough, as wide as the furrow intended to be taken, in order to enable it to plunge into its depth at once on turning into work: this is made at the left-hand side of either furrow, after the small two-horse plough has made its start.

This two-horse plough (one that will take a width of furrow one inch wider than the trench-plough) then precedes, and turns in the manure and turf together with three inches of soil, into the bottom of the furrow or prepared trench. The trench-plough, drawn by four, six, or eight horses, according to the depth desired, then turns over from ten to eighteen inches of* clean soil on the turf, which is so completely buried as to destroy all vegetation, even in freshly broken sod. When the sod is quite fresh, as little soil as possible should be taken up by the small plough, so that the couch or weeds may be more completely covered by a great mass of clean soil. When the ploughed land becomes so wide as to render it inconvenient for one man at *each end* to open the furrow for the plough on one side, and square up the other side neatly, one man is placed at *each corner* to perform this work, so that two additional men at each end of the land, or four in all, are now digging, levelling, and squaring up the corners.

Two acres or more may thus be turned in a day, as the trench-plough takes a wide furrow, from eleven to thirteen inches, and by its excellent construction moves and turns the whole soil.

This operation is performed by joint-stock labour by all farmers in Jersey, who bring their teams to assist each other: it is appropriately denominated not a great ploughing, but a great digging, "*une grande fouerie.*" Indeed, no spade-husbandry is so efficient, as most men in digging merely turn the second spit upon the under or trench slice, whereas the whole soil is shaken and broken by the trench-plough.

The late President of the Horticultural Society, Mr. Knight, thus expressed himself in writing to me in reply to a description of the mode of cultivating potatoes in Jersey:—"Your mode of culture appears admirable—much better than ours; and your great plough, where the soils are deep and rich, must be an excellent instrument, never used in England, I believe."

This was no slight authority, since corroborated by every British cultivator to whom I have had occasion to exhibit its performance.

Loudon, in his "Encyclopædia of Agriculture," describes two trenching-ploughs; one, No. 2616, is called a mining or trenching-plough; the other, 2624, Morton's trenching-plough, with two bodies—both of them quite unsuited for the culture here recommended, whatever their merits may be.

Ordinary ploughings and cross-ploughings are usually a furrow of ten inches by seven; hence it is constantly the same soil that is moved, and, if for a long-rooted crop, not as the French writers recommend, to a depth of three or four inches below the root, but just sufficiently deep to stunt its growth.

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* The ground must be of a rich nature, or the subsoil thus turned up would rather injure than improve any following crop.—F. BURKE.

I feel almost convinced that the long or round-rooted are the proper preparatory crops for wheat, and that wheat after a grass ley fallow is erroneous practice. I have never seen a very fine sample grown by such a course.

It appears to me that I am borne out in these conjectures (hazarded some years since) by the recent discoveries of Liebig, an admirable writer, whose profound researches may lead to great results. I am aware that much of his work may be called scientific—what is sometimes improperly said to be too deep for farmers—but it should be on every farmer's table, were it only for the chapter "The Art of Culture," where he observes :—"There is no profession which can be compared in importance with that of agriculture, for to it belongs the production of food for man and animals : on it depends the welfare and development of the whole human species, the riches of states, and all commerce. There is no other profession in which the application of correct principle is productive of more beneficial effects, or is of greater and more decided influence. Hence it appears quite unaccountable that we may vainly search for one leading principle in the writings of agriculturists and vegetable physiologists."

Further on . It is the greatest possible mistake to suppose that the temporary diminution of fertility in a soil is owing to the loss of humus : it is the mere consequence of the *exhaustion* of the *alkalies*. For, small as is the quantity of *alkali* which plants require, it is nevertheless quite *indispensable* for their perfect development. But when one or more years have elapsed without any alkalies having been extracted from the soil, a new harvest may be expected."

How may I practically apply this ? Twenty years since an old experienced farmer observed to me :—"You do not use vraic (kelp ashes); try them ; put 2*l*. 5s. worth of ashes per acre on your land prepared for wheat, let it lie on the surface a month or two, and turn it in with your wheat ; it will return you 3*l*. or 4*l*. profit, with a finer sample ; it *makes grain*, or fills the ear well." The result has fully justified the prediction. It has been the constant practice in Jersey for a century past, and does precisely act as Liebig states. He observes, p. 152 :—"Wheat will not grow on a soil which has produced wormwood, and, *vice versa*, wormwood does not thrive where wheat has grown, because they are mutually prejudicial, by appropriating the alkalies of the soil." Again, p. 161 :—"It was deduced from all the foregoing facts, that plants require for their growth different constituents of soil, and it was very soon perceived that *an alternation* of the plants cultivated maintained the fertility of a soil *quite as well* as leaving it at rest or fallow. It was evident that all plants must give back to the soil in which they grow different proportions of certain substances, which are capable of being used as food by a succeeding generation.

"Now as excrements cannot be assimilated by the plant which ejected them, the more of these matters which the soil contains, the more unfertile must it be for plants of the same species. These excrementitious matters may, however, still be capable of assimilation by another kind of plants, which would thus remove them from the soil, and render it again fertile for the first. And if the plants last grown also expel substances from their roots, which can be appropriated as food by the former, they will improve the soil in two ways. When we grow in the same soil for several years in succession different plants, the first of which leaves behind that which the second, and the second that which the third may require, the soil will be a fruitful one for all the three kinds of produce. If the first plant, for example, be wheat, which consumes the greatest part of the silicate of potash in a soil, whilst the plants which succeed it are of such a kind as require only small quantities of potash, as is the case with the Leguminosæ, turnips, potatoes, &c., the wheat may be again sowed with advantage after the fourth year ; for, during the interval of three years, the soil will, by the action of the atmosphere, be rendered capable of again yielding silicate of potash in sufficient quantity for the young plants." This is precisely the Jersey practice.

It will be perceived that my anxiety is to prove that these scientific discoveries are in accordance with the soundest practice ; that I imagine it to be dangerous to grow the grass family in succession, as wheat on an old grass ley, to destroy the noxious excrementitious matter of which requires from five to seven ploughings, and a whole season of labour and waste of land ; whereas, by the use of the Jersey trench-plough, those crops may be grown which prepare the land well, and themselves furnish nutritive matter for wheat or barley. By the mode of culture described, from 13 to 14 tons per acre of potatoes are grown on all good soils in this island, though 16 is a frequent crop, and the same soils usually produce 30 bushels of wheat per acre in ordinary seasons ; while in the best they regularly produce 48 imperial bushels. I should recommend this system for all lands that can be ploughed from 9 inches to any greater depth —as a trench 9 inches deep, and of proportionate width, say 18 inches, would receive the turf and manure skimmed 3 inches, then be perfectly covered by 6 inches of clean soil, with the trench-plough and a pair of, or three, horses. Wherever the till or subsoil is new and uncultivated, only an inch or two of it should be brought up in a season and well top-dressed, by which means 2 or 4 inches of working soil might be gained in every four-course shift. When a failure in a crop takes place by the increase of depth of ploughing, it is usually from too suddenly bringing a large quantity of maiden soil to the surface, so that its acrid nature injures the young rootlets of the crop ; whereas, if only a small portion be brought up and well intermixed with the old soil, which it would be most completely so by using the paddle-plough, it may merely act as a stimulant, and be beneficial. This is a condition to which the attention of experienced as well as young farmers is specially invited.

A very competent farmer in East Lothian* thus writes of the Jersey trench-plough, used by him last year for the first time:—"It is hard work for four horses ploughing 14 inches. I used six ; they can work it without straining themselves 16 inches deep. Nothing can do its work better ; it makes the best sole to a furrow I have ever seen. No person could know the land had been ploughed. My turnips are quite beautiful. I trench-ploughed one field in the dry weather, and reduced it with the clod-crusher to fine dust. No field has a better appearance, and quite before the regular turnip-land in the country."

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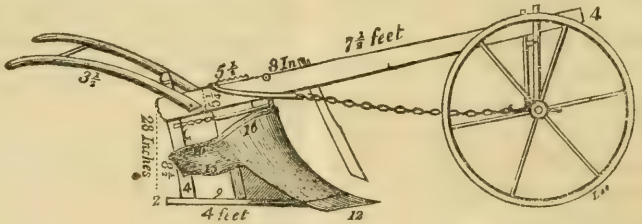
* I have permission to name that distinguished friend to agriculture, the Marquis of Tweeddale.

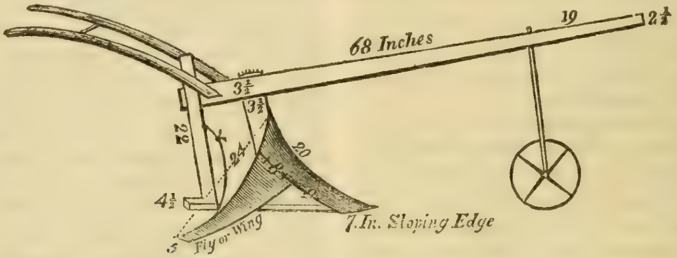


Large wheel, 42 inches diameter.
Small ditto, 38.

N.B.—When there is a coulter, which should take about 4 inches of earth, no earth falls back into the furrow, which is the case if no coulter is used. Boutillier's price for a great plough with coulter, chain, and wheels, with gallows complete, is 6*l.*; extra strong, 7*l.* to 8*l.*

The Jersey Potato-setting Plough.

The fly or wing is moveable, and can be set to 16, 18, or 20 inches:—



After the land has been trench-ploughed, as described, a light harrow is passed over it; a cross-harrowing is given when necessary. The land is not cultivated in ridges; being generally self-drained, it is always levelled as nearly as possible. The potato-setting plough is then used. This plough was invented in 1834 or 1835, at the suggestion of the writer, by Le Boutillier, the smith who devised the paddle or potato-digging plough. It weighs about 60lbs., and in light soils may be drawn by one horse, though more work is performed by using two.

In form it is a diminutive of the trench-plough, which suggested its use. It traces a furrow 5 inches wide at the desired depth, from 3 to 6 inches, regulated by the wheel, and the earth is carried off 18 or 20 inches to the right by the wing of the turn-furrow, so as to fill the last-formed furrow, into which women or children, stationed at regulated distances, will have dropped the sets: thus no delay whatever takes place.

By the usual method there is much loss of time, as the setters have to wait till the plough has taken its second turn to cover the potatoes previously set. With this plough, half the time and much labour is saved, as the two operations are performed at once.

The usual after culture is to horse-hoe the potatoes twice: once as they appear after a harrowing; the second about a month later. The method of taking them up by Le Boutillier's paddle-prong plough is now added.

When the potatoes are ripe, the tops and large weeds should be drawn from them or cut off, and removed from the field, or conveniently placed in rows. Some farmers then harrow the surface to level it, if the potatoes are sufficiently deep not to be disturbed by the harrowing.

A straight-edged furrow should then be opened at each side of a field or piece of land to be dug, so as to enable the revolving prongs of this plough to turn freely sideways at once, then the plough, drawn by three horses, if the land is heavy; if light, two, should proceed round the field as many turns as the width of a harrow. It throws out the potatoes sideways by means of the revolving prongs. The horses must then be taken from the plough and hooked on to the harrow, which should take one turn in order to uncover any potatoes which the prongs may have caused the earth to cover in revolving. The horses are again tacked to the paddle-plough, and so on.

Women or children placed at such convenient distances as not to delay the plough or harrow, will have picked up all the small weeds and potatoes, and thrown them into separate heaps, and the work will proceed at the rate of two acres in a day, with a driver, three horses, and twelve pickers. The drier the weather and land is, the better will be the work. The land remains finely comminuted and levelled.

My own practice is, as soon as the crop is off the ground, to spread lime, or ashes, or soot on the land, and give it a second rather deeper ploughing with the paddle-plough, in order to mix them intimately with the soil, and to collect the potatoes that may have remained after the first ploughing.

Fewer potatoes are bruised, cut, or smashed by the revolving prongs than by men lifting them with forks. Care must be taken that the ploughshare is sufficiently below the potatoes to lift them fairly, so as to be caught by the revolution of the prongs.

If the horses are driven on the land, three in a line, not a potatoe will be injured by them.

J. Le Couteur.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

BRISTOL MEETING.

MONDAY.

ADDRESS TO THE DUKE OF CAMBRIDGE.

A special Meeting of the Council was held when the address to be presented to his Royal Highness the Duke of Cambridge, on the occasion of his visiting the city, was unanimously agreed to.

TUESDAY.

THE MAYOR'S BANQUET.

This magnificent banquet was given at the Merchants' Hall, in King-street, the Society of Merchants having readily placed at the disposal of his Worship the whole suite of rooms comprised in that fine building. Covers were laid for 80 guests.

On the sideboard behind the principal table was arranged the magnificent gold salver, the property of the Corporation, and which was stolen at the time of the lamentable riots in 1831, and afterwards almost miraculously recovered; on either side several superb silver-gilt flagons, massive and curiously chased punch bowls, and other splendid table ornaments, were arranged, and against the wall, surmounting the table, was fixed the sword of state. This room was hung with the splendid portraits of George III, and George II, the property of the Corporation, and which have so often excited the just admiration of connoisseurs; numerous handsome banners, on which were emblazonedthe royal arms, the arms of the city, and other devices, added also to that imposing effect. The principal ornament of the circular table was a truly magnificent silver flower vase, upwards of two feet in height, with three rampant steeds springing from the stem, the whole most curiously and elaborately carved. In the large dining room two long tables were laid out in the same style of splendour; at intervals of about a yard were placed most elegant table ornaments, from many of which the choicest flowers shed the most delicious perfume. The walls were all hung around with portraits by the first masters, of men eminent in their generation, for their public and private worth; of men to whom the lines of the poet well apply—

> "From hence the race of Alban fathers come,
> And the long glories of majestic Rome."

The windows of the Hall were hung with crimson drapery, the floors covered with carpets of the finest texture, and the whole was lighed up by the magnificent chandeliers belonging to the Society of Merchants.

His Royal Highness the Duke of Cambridge, arrived at the terminus of the Great Western Railway at 5 o'clock, where a distinguished party had assembled to receive him. He proceeded in the Mayor's state carriage to the rooms provided for his reception in College Green. His Royal Highness arrived at the Hall about seven o'clock, where his worship and the deputation appointed by the Town Council, attended to present the address of congratulation, and after a few introductory remarks from the Mayor, the Town-Clerk read the address to his Royal Highness, who appeared to be highly gratified with the attention of the corporation, made a gracious reply.

This ceremony having been concluded, the noble and distinguished company took their seats at the dinner table about eight o'clock. At the principal table were seated his Worship the Mayor, G. W. Franklyn, Esq., having on his right his Royal Highness the Duke of Cambridge, his Grace the Duke of Beaufort, and the Marquis of Downshire; and on his left his Grace the Duke of Richmond, the Hon. Edward Everett, Envoy from the United States, and the Earl of Essex; at the other table were seated the Marquis of Worcester; the Earl of Ilchester; Earl Somers; Earl Ducie; Lord John Somerset; Lord Charles Beauclerc; Lord Staverdale; Lord Portman; H. Handley, Esq., President to the Society; the Hon. R. H. Clive, M.P.; the Hon. F. Charteris, M.P.; the Hon. Mr. Agar; the Hon. Grantley Berkeley, M.P.; Baron Knesebeck (of the suite of his H. R. H. Duke of Cambridge); the High Sheriff; Sir John Johnstone, Bart.; Sir Charles Lemon, Bart., M.P.; Sir A. Hood; Sir T. Acland, Bart., M.P.; Sir Francis Lawley, Bart.; the Very Rev. the Dean, Dr. Lamb; the Rev. Professor Lee; the Rev. Canon Harvey; Dr. Buckland; the Rev. W. L. Rham; the Rev. J. R. Smythies; the Mayor's chaplain; P. S. Miles, Esq., M.P.; William Miles, Esq., M.P.: Philip Pusey, Esq., M.P.; J. W. E. Sotherton, Esq., M.P.; D. Barclay, Esq., M.P.; T. W. Bramston, Esq., M.P.; John Benett, Esq., M.P.; E. W. W. Pendarves, Esq., M.P.; William Codrington, Esq., M.P.; Robert Bragdon Hale, Esq., M.P.; Walter Long, Esq., M.P.; Edward Buller, Esq., M.P.; J. Neeld, Esq., M.P.; Captain Gordon, R.N.; Captain Stanley Carr; Colonel Challoner; Colonel Austin; Lieut. Lys; R. A. Slaney, Esq.; T. R. Barker, Esq.; Stephen Grantham; William Shaw; J. V. Shelley; Francis Pym; George Kimberley; Henry Boys; Charles Hillyard; Samuel Jonas; G. W. Hall; John Elman; William Wood; Henry Blanchard; Walter Strickland; Francis Savage; Vincent Stuckey; L. M'Bayne; Thomas Kington; Robert Phippen; J. George; H. Bush; P. Maze; P. F. Aiken; Joseph Cookson; J. K. Haberfield; D. Burges (Town Clerk); J. Hudson; J. Franklyn; W. Church; J. Marmont; — Gardiner; W. F. Hobbs, and Browne, Esqrs.

D. Burges, Esq., officiated as Vice-President at one table, and J. Franklyn, Esq., at the other.

The cloth was removed about half-past ten, soon after which,

His Worship the MAYOR rose and proposed "The health of her most gracious Majesty the Queen." (*Cheers.*)

"The health of the Queen Dowager," (*Cheers.*)

"The health of his Royal Highness Prince Albert." (*Renewed cheering.*)

The MAYOR.—I have now the honour to propose to you the name of the illustrious Prince who sits upon my right hand. (*Loud and long-continued cheering.*) I feel that a high compliment has been paid to the City of Bristol, by the visit which his Royal Highness has been pleased to honour us with this day, and I hope and trust that the reception he has met with from the hands of the citizens of Bristol, unprepared as they were in some measure, has made some impression upon his mind. I feel sure there is not within her Majesty's wide dominions a more loyal people than the inhabitants of Bristol. I fancied as we were passing down to the hall this day, that I could trace in the joyful countenances of the assembled thousands, sentiments of the deepest devotion and affection to the throne, and that their hearts grew warm within them on beholding amongst them a member of that illustrious family which has so long swayed the sceptre of these kingdoms. It is now many years since this city has been honoured with a visit from a member of that illustrious family, and I hope that what his Royal Highness has witnessed this day will assure him that the citizens of Bristol are a loyal people, entertaining feelings of sincere and solemn attachment to the throne and to the institutions of their country, which nothing can abate. I have great satisfaction in proposing to you "Health and long life to his Royal Highness the Duke of Cambridge."—(*Loud cheers*).

His Royal Highness the DUKE OF CAMBRIDGE upon rising to return thanks, was received with another hearty burst of applause. He said—Mr. Mayor and Gentlemen, I return you my most grateful thanks for the honour which you have done me in drinking my health. I can assure you that I feel equally gratified by the manner in which it was proposed to you by the Mayor, and the manner in which you have had the kindness to accept it. Gentlemen, I am conscious that I cannot sufficiently express to you my feelings upon the present occasion; indeed I have before had the satisfaction of expressing to you the sense I entertain of your kindness, when I was honoured with an address upon my first arrival in this city. I then, I repeat, had the pleasure of making known to the inhabitants of the town of Bristol how much pleasure I experienced at receiving that address, and at the reception which I met with when I arrived at the railway station. (*Cheers.*) It was to me most gratifying, not from a sense of my own merits, but as affording me a convincing proof of your loyalty and attachment to the family to which I have the honour to belong. (*Loud cheers.*) Gentlemen, we are all met here upon a most interesting occasion—the anniversary of a very valuable Society, and one with reference to which I believe that every man who wishes well to his country, must be glad to belong to, and feel a pride in being associated with it. I will take the opportunity to observe, that we all, both the gentlemen connected with the town of Bristol, and gentlemen connected with other towns, feel grateful for the satisfaction and enjoyment which we have met with to-day, in the very excellent dinner given to us by the worthy Mayor of this town;—(*Cheers*)—I will, therefore, conclude by asking you to drink "The health of the Mayor of the city of Bristol." (*Continued cheering.*)

His WORSHIP acknowledged the compliment in a few appropriate words, expressive of the ardent hope that on that day, and during the whole time of his serving the office of Mayor, his conduct had been such as to deserve the approbation of his fellow-citizens.

The MAYOR.—I have now to propose to you "The Lord Bishop and Clergy of the Diocese." I am sorry that we are not this day honoured with the company of his Lordship, of whom I need hardly say that his unremitting attention to the discharge of the sacred duties of his office and his deep piety, have earned for him the esteem of all. (*Cheers.*)

The Rev. Canon HARVEY said—In the absence of the Dean and Dr. Lee, I find that it devolves upon me to return thanks for the toast just proposed. I am sure that had the Bishop been here himself, he would have been most particularly gratified, Sir, at the manner in which you have been pleased to express yourself towards him. In the name of the Clergy, who have always experienced at your hands, and from all who have filled the situation which you now occupy, the greatest kindness, and of which they are not insensible, I beg to return you our best thanks for the compliment you have been pleased to pay us. (*Applause*).

The MAYOR.—I have next to give you, "The Army and Navy," two services, whose flag has scarcely ever been tarnished, and to whom the people of this country are deeply indebted for the protection which has been afforded to them against foreign enemies. (*Loud Cheers*).

His Royal Highness the Duke of CAMBRIDGE said—As senior officer in the service, now present, it devolves upon me to return thanks on behalf of the army for the honour you have done us; the British army is deserving of, and will be found to receive the high encomiums passed upon it; and I firmly believe that they will always be ready to fight the battles of the country whenever called upon to do so. (*Loud Cheers*).

Admiral GORDON returned thanks on behalf of the navy.

The MAYOR.—I now propose to you, "The Royal Agricultural Society of England." I cannot speak so particularly as to the merits of this Society, as some gentlemen present; we are yet behind the curtain as to the quality of the stock or the excellence of the implements exhibited; yet, nevertheless, I believe that there is not an individual in the room, nor in the country, who will not agree with me, that great good results from the establishment of such a society as this; there is not a class of persons but who must, in a greater or a less degree, derive benefit from it. (*Cheers*) I think I recollect that a distinguished President of the United States said in one of his addresses to the people, "it is highly necessary that a country should be independent of every other country for its sustenance." Now, it must be obvious to every one, that such a Society as this is eminently calculated to produce such results, particularly when individuals, both of the highest rank, and, I might say, if it were not considered an invidious distinction, of the lowest rank likewise, associated together for that purpose. (*Cheers*). On this occasion, I must say that I feel it a compliment and an honour to the city, that the Royal Agricultural Society of England should have selected Bristol as the place of rendezvous this year, and I hope and trust that they will not depart from the city without being fully assured that they meet with a hearty reception from all classes of the people. I do not look upon this visit and its beneficial effects, with a view to the paltry matter of pounds, shillings, and pence; my ideas carry me far beyond that, and I trust that at some future day the Society will again select Bristol as its place of meeting. (*Hear, hear*). I give you "The Royal Agricultural Society of England, and continued prosperity to it." (*Loud cheers*).

H. HANDLEY, Esq., M.P., said—On behalf of the Royal Agricultural Society of England, of whom I am the unworthy representative on this occasion, I tender my most grateful thanks for the compliment you have paid us; and to you, Sir, more particularly, for the kind manner in which you have expressed your feelings in our behalf, hoping that we shall, before long, raise the curtain sufficiently high to introduce to you all the arcana and mystery of our science. *(Hear, and a laugh.)* From the last occasion, sir, on which, in my official capacity, it was my duty to communicate with your predecessor, when the Royal Agricultural Society selected this celebrated emporium of Bristol commerce as the site of the present exhibition, to the present time, we have received at your hands the utmost urbanity, kindness, and hospitality—nay even, I may say, the anticipation of our almost every want; and if our wishes were expressed, it was with a full knowledge that they would be realized; therefore, we should be very ungrateful if we did not feel that we had made a most happy selection of our place of meeting upon this occasion. *(Hear, hear.)* Gentlemen, before this week has passed over, the city will be visited by many thousands of farmers from different parts of the country, and I am persuaded that they will leave it after viewing the results of the enterprise and industry of the citizens, with this conviction—that the interests of the British merchant and the British agriculturist are inseparable. *(Cheers.)* We, sir, in our vocation, find that the admixture of soils is essential to fertility; and a combined mixture of classes adds no less to the solidity of society. Indeed, I do not venture too much when I assert that there will be better days for England when the two reciprocate mutual congratulations on the mutual prosperity of both. *(Loud cheers.)* On behalf of the Society, whose mouth-piece I am upon this occasion, I cordially and respectfully return you our best thanks. *(Cheers.)*

The MAYOR.—I am now coming, I may say, within the walls of our city. In proposing to you the health of the distinguished individual I am about to mention, I do so with the conviction that the toast will meet with a warm reception. I allude to the Lord High Steward of Bristol. *(Loud cheers.)* A member of his noble family has been for centuries connected with the city of Bristol; and I am sure that there is not an individual in the room—not in the city of Bristol, but will heartily join with me when I speak of the kind manner in which the Duke of Beaufort, whether in his private or in his official capacity, deports himself towards those with whom he comes in contact. From the citizens of Bristol, I again repeat, he merits the warmest thanks: I feel obliged to him for his attendance here to-day, and have the greatest pleasure in proposing "The health of his Grace the Duke of Beaufort, the Lord High Steward of Bristol. *(Loud cheers.)*

His Grace the Duke of BEAUFORT said—I beg to return you my most heartfelt thanks for your kindness in being pleased to drink my health; with regard to the encomiums which the Mayor has been kind enough to pass upon me, I must say that I am not entitled to them; but I will say, that so far as attachment to the city of Bristol goes, I will yield to no man. *(Hear, hear.)* The inhabitants of Bristol have shewn great kindness to me and to my family, therefore I feel it not only a duty, but a pleasure, to do everything I can to promote the prosperity of the city. *(Cheers.)*

The MAYOR.—I beg to give you the health of another distinguished individual connected with the city of Bristol, and at the same time to express my regret that he has not honoured me with his company to-day. I give you "The health of the Lord Lieutenant of the City and County of Bristol, Earl Fitzhardinge." *(Loud cheers.)*

The Hon. GRANTLEY BERKELEY, M.P., returned thanks. He said—On the part of my brother, Lord Fitzhardinge, I beg to return my best thanks for the honour done him; also, on his part, to express regret that, in consequence of the duties he is called upon to fulfil in Parliament, as well as those of a private nature, prevented his being present upon this occasion. *(Hear, hear.)*

His Grace the DUKE OF BEAUFORT rose and said—I have the permission of the Mayor to propose a toast which I am sure you will all drink with the greatest satisfaction: it is the health of a nobleman to whom I may safely say that the Agricultural Society is more indebted than perhaps to any other person in this kingdom. I give you "The health of his Grace the Duke of Richmond." —*(Loud cheering.)*

His Grace the DUKE OF RICHMOND said—I respectfully remind you that that toast has been proposed to you by one who was one of my old companions in arms at the Peninsula, and who, therefore, may be supposed to be prejudiced somewhat in my favour: if any gentleman has any claim to particular merit at your hands, it is Lord Spencer, who presided at one of their great meetings in London, when the establishment of this Society was first proposed; and by the assistance of the practical and intelligent farmers of the country, it was established: but, Gentlemen, in this respect I cannot claim any superior merit over my friend Earl Spencer. My purpose now is to express to the Mayor the gratitude which I individually feel, and which I believe the members of the Council and the farmers of England feel at the hospitality shown to us, and of the kind reception which we have met with at his hands. *(Cheers)*. Gentlemen, it appears to me of great national importance that it should be known that the Agricultural Society of England has been formed, not for the purpose of advocating party or political subjects, but formed for higher motives—the desire to impress on us all that feeling which has ever led the people of England to surmount every difficulty which has been placed in their way, by feeling that they have reliance in themselves—*(Cheers)*. I cannot have come to this town without having witnessed the hospitality of the constituted authorities,—without seeing the kind reception which we have met with from all classes of the people here; and I cannot fail to look at the liberality displayed by the members of the public institutions, who have thrown open their doors to all strangers who attend this meeting. *(Hear, hear.)* I think that of great importance, and more particularly when I look at this great commercial city, and when I consider the vast extent of its commercial transactions; when I remember that its citizens have ever maintained that high character for honour and integrity which ever distinguishes the British merchant in every region of the civilized globe—I hail this expression to the agriculturists of the country—I hail it with feelings of the greatest gratitude,—because it proves to me, (and in this I doubt not you will all concur) that the commercial, manufacturing, and agricultural interests of this country ought to do their utmost in their own sphere,—ought to lose no opportunity to exert themselves to attempt to promote that good-will and cordial feeling, which, permit me to say, is the strength of this empire. *(Loud cheers.)* Gentlemen, I have not been brought up to speaking at public meetings, though I am bound to say that I cannot plead guilty to the charge of not having often addressed them, but I have never addressed a public meeting, nor ever will I, without remembering to enforce the great precept that to be strong we must be united. (*Cheers.*) We ought to do the utmost we can to bring science to aid not only the practical farmer but every other interest in England. (*Renewed cheering.*) I thank you, gentlemen, for your kindness in drinking my health, and I trust you will permit me to hope that we shall all meet the day after to-morrow at the place where I will show those of you who are not farmers a sample of the British farmer, and if you are not satisfied with it, I can only say, that I do not know of anything that will satisfy you. (*Loud Cheers*).

The MAYOR.—The next toast which I have the honour to submit is, "The Council of the Royal Agricultural Society." (*Cheers*). It was my intention to have coupled with that toast the name of His Grace the Duke of Richmond, but the Duke of Beaufort has rendered that unnecessary by proposing the health of the Noble Duke apart. I give you "Success to the Royal Agricultural Society." (*Cheers*).

The MAYOR immediately rose, and said—I did expect to have been honoured by the company of several foreign ambassadors, but I regret that they were not able to attend: I rejoice, however, to see here a distinguished individual connected with the United States, the Hon. Mr. Everett. (*Cheers*). I am sure that my fellow-citizens will hail with great satisfaction the arrival amongst us of a gentleman intimately associated with a country connected so closely as it is with this city in many important branches of commerce. I beg to give you, "The health of Mr. Everett, the Envoy of the United States." (*Cheers*).

The Hon. EDWARD EVERETT said—Sir, I feel obliged to you for proposing my health in the very flattering manner in which you have done; and to you, Gentlemen, for the kind manner in which you have received it. I can assure you that I feel myself most happy at being present on this occasion, which is one of deep interest to me; for I fancy, if it is but fancy, that there is some slight similitude between the manner in which you conduct these affairs in England, and the way in which they are managed in my own country. True, it is not one of the fundamental principles of your constitution that all are upon an equality; and I thought that there was same difference in this respect between Great Britain and America; but last week I had the honour of meeting his Royal Highness at Cambridge, where he had on his scarlet frock and cap, like the students of that institution, mingling with the doctors; and now I have the honour to meet him at this table, mingling with the farmers of England. (*Hear and cheers*). I think that this example set by his Royal Highness—one of the highest personages in the realm—is calculated to have a most salutary effect. (*Cheers*). Gentlemen, I feel a proud satisfaction at being present in a city so ancient and so respectable as Bristol; it is a city with which the people of the United States have had, from the earliest accounts, connexion more or less. (*Cheers*). Perhaps it is a fact not known to every gentleman present, that the great Columbus, the discoverer of America, was at one time engaged in business in the port of Bristol, carrying on the trade of a common pilot between Bristol and Iceland: the course of commerce has, however, changed a little since that, (*a laugh*), which I hope is for the benefit of both countries. (*Hear, hear*). In later times a very intimate connexion has sprung up: you were the first to set the example of navigating the Atlantic by steam; and I can assure you that the arrival of the *Great Western* in our waters was considered an era in our history; it was an auspicious beginning, and every one looked upon the vastly extended mode of traffic as the harbinger of a great increase in the commercial transactions of the respective nations. In this business of steam navigation, the two countries must help one another, which I hope they will always be ready and able to do. (*Hear.*) The steam-engine, as an instrument, was put together and perfected by Bolton and Watts, but in applying it to the purposes of locomotion, there was not much done with success in this country till one of my countrymen, Fulton, improved upon it: he took the engine of Bolton and Watts, and applied it to locomotion, and thus we are enabled to hold communication between the two countries, the result of the united talent and capacity of both parties. (*Hear, hear.*) Gentlemen, on this occasion I feel myself at home, in this the home of my fathers. (*Loud cheering.*) In coming down from London to Bristol this day, I noticed that there is scarcely any name of a place on the road of which there is not the counterpart in my native land; and this probably may be accounted for, from the fact that some of the earliest settlers went from this part of the country: we have our Bristol, our Bath, our Wells, our Plymouth, our Exeter; every name, in short—our Gloucester, too, in this neighbourhood exists in my own country. In casting my eye over the map of this country I do not find a strange name; and this, I can assure you, is pleasing to an individual who is so far removed from his friends and his country. For the kindness with which you have expressed yourself, sir, and which the company has been pleased to echo, I feel that I should be wanting in gratitude were I not again to thank you, and in conclusion I express my earnest wish for the increased prosperity of, and communication between, the two countries. (*Loud cheers.*)

The MAYOR.—The next toast which I have to propose is that of the healths of the Members of Parliament for this city; I regret that Mr. Henry Berkeley is not here; Mr. Miles, however, is present, and with reference to him I must say that the citizens of Bristol are greatly indebted to him for the attention which he manifests towards their interests: on all occasions when he is called upon, whether by public bodies or private individuals, he is most ready and willing to render every assistance. Though he is young in years, yet his studious application to the duties of his situation calls on me to express to him our acknowledgments. (*Cheers.*)

P. W. S. MILES, Esq., M.P., said—on behalf of my colleague and myself, I beg to return my best thanks for the honour you have done us; and to express a hope that not only Bristol, but the West of England may long be benefited by this meeting of the Agricultural Society. (*Cheers.*)

The MAYOR.—I have great pleasure in proposing the health of the Members for the county of Somerset: one of those gentlemen is here to-day, and I am sure I need not in this company say one word in his favour, as his character is so well known and so highly appreciated. (*Cheers.*)

WILLIAM MILES, Esq., M.P., said—I am really taken, as the sailors would express it, "rather a-back" upon this occasion, because I was in hope that in the present intance the Members for Somerset would have escaped; but as you have kindly paid the compliment of drinking our healths, it devolves upon me, in the absence of the other Members for Somerset, to return you my best thanks. I am sorry that they are not able to attend, as I am certain had they been here, they would have aided in promoting the common cause of the cultivator of the land; they would, I am sure, have been truly delighted to have been here, and to have availed themselves of the opportunity of attending the various institutions of the city which have been so liberally thrown open by the citizens of Bristol, as well as to have attended the meetings of the Society to-morrow and on the ensuing days, and lent their aid in carrying out every proceeding connected with this Society (*Cheers.*) Whilst I am speaking I must say that I rather take blame to myself for not having risen previously to return thanks on behalf of the Council of the Royal Agricultural Society; but when I see so many more able individuals, connected not only by literature, but by strict application which devolves on them in the Council, I could not as such an humble individual rightly return thanks collectively for that body: now, however, whilst I am on my legs, I beg to return my thanks, not only for the honour done to the members of the county of Somerset, but for the honour done to the Council of the Royal Agricultural Society—wishing as I do that his Grace the Duke of Beaufort had not prevented his Grace the Duke of Richmond returning thanks on behalf of the Council, of which he is so able and elevated a member.

His Grace the Duke of RICHMOND said—I am quite sure that Mr. Miles has returned thanks far better than I could have done, on behalf of the Council of the Royal Agricultural Society. I am one of those, and I am sure the gentlemen who came down with me are of the same opinion, who feel that I ought to rise and ask you to drink the health of an individual who held the office of Mayor when we visited Bristol for the first time in reference te this exhibition (*Cheers*). He gave us, I may say, the forewarning of the reception which we have met here to-day, as agriculturists or farmers, for the one and the other is the same thing, I have always felt, and I am sure the farmers will feel with me, that we owe a debt of gratitude to those who have preceded us in our labours; and, therefore, we ought not now, in the presence of the Mayor who has so hospitably received us here to-day, forget the Mayor who received us in November last, and who behaved in such a manner as led us to anticipate our reception here at this time (*Cheers*). I, therefore, as a debt of gratitude, ask the Council of the Agricultural Society who experienced such kindness from him on the occasion to which I allude, and I will venture to ask the citizens of Bristol, who have long known him, to join with me in drinking his health, and many thanks to him for his kindness on that occasion—(*Loud Cheers*).

R. PHIPPEN, Esq., (late Mayor) said—I cannot, I am sure, fully appreciate the honour thus conferred upon me; I can assure every member of the Council of the Royal Agricultural Society that I feel deeply indebted to them for honouring me upon that occasion. I have great pleasure in expressing my assent to what fell from the Noble Duke (Richmond), that the connexion between the commercial and agricultural interests of England is of vital importance; I believe that the stability of the constitution mainly depends upon their union (*Cheers*). I beg again to thank you for the honour done me, and heartily wish success to the Royal Agricultural Society (*Cheers*).

The MAYOR next proposed "The Members for the county of Gloucester."

The Hon. G. BERKELEY returned thanks.

The MAYOR next gave the health of a gentleman, who, ever since his elevation to the office which he then filled, had won for himself by the kindness of his manner and the urbanity of his disposition, the affection and esteem of the whole of his fellow-citizens; be begged to give them "The health of the High Sheriff of Bristol."—(*Loud cheers*).

J. JONES, Esq., returned thanks for the honour done him. He felt ashamed to rise upon that occasion, knowing, as he did, how little he deserved of the compliment which the Mayor had paid him. He felt proud that the dnties of the office which he had then the honour to fill, devolved upon him during the year when the Royal Agricultural Society visited Bristol, and assured the meeting that he would do everything in his power to promote its success.—(*Cheers*).

The MAYOR then proposed "The health of Lord John Somerset, the Inspecting Field-Officer of the district."

His Lordship returned thanks for the honour done him, and assured the company that he should always be happy to exert himself in any way to promote the prosperity of the city of Bristol—(*Cheers*).

The MAYOR gave "The Society of Merchant Venturers, and thanks to them for the use of the Hall"—(*Cheers*).

F. SAVAGE, Esq., returned thanks.

The MAYOR said he felt that in English Society they ought never to leave the room without giving the name of an illustrious individual, who had received glory and honour in the services which he had rendered to this country; there was not, he was sure, an individual in the kingdom who did not feel deep pride and satisfaction on hearing the name of the Duke of Wellington. (*Loud cheers*). He begged they would drink the health of the Duke. (*Cheers*).

The Duke of CAMBRIDGE.—I trust I may be allowed as an officer in the army, to express my gratitude for the honour you have conferred upon the Duke of Wellington. It must be a subject of pride to every one belonging to the army to have such a man at its head. I look upon the Duke of Wellington not only as the greatest general of his age, but also as one of the greatest statesmen, and a man of unstained loyalty and true attachment to this country. Whether, therefore, as a soldier or otherwise, I feel proud in drinking the health of his Grace the Duke of Wellington (*Loud cheers*).

His Royal Highness, preceded by the Mayor, then left the Hall, and proceeded to Leigh Court, the seat of P. J. Miles, Esq. The banquet closed about one o'clock in the morning.

WEDNESDAY.

EXHIBITION OF IMPLEMENTS.

The Yard was opened to the public on Wednesday; the following is a list of the implements exhibited:—

No. 1.—The Right Hon. the Earl of Ducie, of Tortworth Court, Wotton-under-Edge, Gloucestershire. —Two iron swing ploughs.—For trial.

A scarifier or cultivator.—For trial.

A double-row turnip and manure drill.

A single-row ditto.

A five-tine expanding horse hoe.
A three tine ditto.
Two chaff cutters.
A subsoil plough.
A Scotch cart, with improved axle.
A land roller.
A clod crusher.
A smith's forge.

A plough of an improved construction, by R. Clyburn, of Ury.

A chaff-cutter, the invention of his Lordship, R. Clyburn, and E. Budding.—To compete.

A double-row turnip and manure drill, on an improved construction, by W. Richard Clyburn.—To compete.

A scarifier, or cultivator, the invention of Mr. John Murton, of Chester-hill, near Stroud.—For competition.

Two horse hoes, the invention of Mr. John Murton, of Chester-hill, near Stroud, and Mr. W. B. Wingate, of Hareby, near Boston, Lincolnshire.—For competition.

A portable smith's forge. Its merits consist in, first, its perfect portability; second, it takes but little room, and can be placed in almost any situation. It will enable a smith to work on the premises, or for shoeing horses; the invention of Mr. Richard Clyburn, of Ury.—For competition as a new instrument.

No. 2.—Messrs. O. and G. Moggs, of Bourton, near Wincanton.—Cheese-presser, invented by W. D. Moggs. —To compete.

One iron threshing machine.

No. 3.—Mr. John Howard, of Bedford.—Two chaff-machines. One of which is intended to be worked by manual power, made with a revolving sacking bottom, which entirely prevents the machine from choking, that is, the yelm or seed from working through the cavities between the rollers, which is a fault generally complained of in other machines. The horse-power machine is made very similar, but larger and stronger, and capable of cutting 120 bushels per hour with one horse.—To compete.

One turnip cutter: the knives of which are placed or fixed upon a disc; and are arranged in such a manner that each knife comes into operation successively, consequently reducing the labour; it is capable of cutting two bushels in a minute with comparative ease. By removing part of the knives, it is rendered a slicer for bullocks.—To compete.

Armstrong's patent plough.—This plough will be found to draw lighter than any now in use, as great attention has been paid to the formation of the furrow-turners, which are found to scour on almost every description of soil; consequently, reducing the power required nearly fifty per cent. The mode of fastening and setting the coulter, combines the greatest simplicity with the utmost security; by three screws only it may be set in one minute, in any position, thus entirely doing away with that loss of time which is so frequently complained of. The share is fastened by a screw rod turning under the share and connected with the frame, so that the share may be removed or rendered fast with the greatest ease and despatch. This plough in dry weather will be found of real worth, as the draught-chain can be so regulated, that the strongest land may be ploughed with comparative ease. When ploughing foul land, where the twitch, &c., drives up, the draught-chain may be removed from the body of the plough, and hooked to the centre of the beam, so that it forms no obstruction. The parts of this plough are very easily replaced, and quite suited to capacities of the generality of ploughmen.—For trial.

A set of harrows, invented by Mr. W. Armstrong, of Hawnes, Bedfordshire.—For trial.

A horse hoe, ditto, ditto, ditto.

A scarifier, or scuffler, the invention of Mr. W. Armstrong, of Hawnes, Bedfordshire.—For trial.

Three sets patent wrought-iron harrows, of different sizes.—These harrows are made in a peculiar zig-zag form, by which the tines are so arranged that they cut a separate track from each other. The tines being thus placed are at a greater and more regular distance from each other, which is a decided advantage in wet weather and on foul land, as it prevents them clogging or muzzling. One decided advantage these harrows possess over others, is in the principle of draught, as upon the original mode of draught, the horses draw from two or more places in the whipple-tree, so that if one horse draws more forward than the other, the harrows are drawn out of their right track, and the tines are thus made to follow each other, which of course is a total loss of horse-power; but, upon his new principle of draught, which is from a centre, let the horses draw ever so irregularly, no power is lost, as one part of the harrow is not more affected than the other. The harrows being attached to the whipple-tree by double hooks, prevents them, in rough work and turning, from riding on each other. The tines are made with a square shoulder, and secured to the frames by means of a nut and screw, consequently they may be taken out and relaid without the frame or beams sustaining any injury. The bows or slides on the backs of the harrows will be found very convenient in removing them.

One wrought-iron horse hoe, the shares of which are set in a slanting direction (as a plough coulter), by which they work much cleaner. It is arranged for three rows of turnips sown upon the flat, and by having a treble set of shares they can be set to take 3 rows of beans and 5 rows of wheat.

Four patent ploughs of different sizes.

Two scarifiers, made entirely of wrought iron, very simply constructed, made with the tines, or shares, to shift to suit the nature of the work.

Also an assortment of implements on the part plan of Mr. Armstrong, of Hawnes, Bedfordshire.

No. 4.—Mr. Wm. Cambridge, of Market Ladington, Wilts.—A portable steam engine, with threshing machine attached, on the vibrating high-pressure system. —Its merits are, its cheapness in working, 3½ cwt. of coal per day, will do work equal to four horses. Improved and made portable by himself.—For competition as a new implement, and for sale by auction.

An assortment of implements.

A chaff-cutter, to be worked by horse or hand.—For sale, and to compete.

A scarifier, or horse hoe, complete in one.—For sale, and to compete.

No. 5.—Messrs. Cottam and Hallen, of Winsley-street, London.—One cultivator, one drill, one weighing machine, three ploughs, trocharoton, one hoe-plough, one odometer, one dynmometre, one chaff machine, one threshing machine, one oat crusher, one pair of harrows, one dibbling machine, one huckling machine, one set of drum tools, two transplanters.

A machine, the invention of Lady Vavasour.—For trial.

A ditto, the invention of Mr. George Cottam.—For trial.

A patent conical wheel plough, the invention of Mr. Alexander F. Cample and Charles White, of Great Plumstead, near Norwich.—For trial.

An implement, the invention of Mr. G. Cottam.—For trial.

One row drill, for seed, invented by Mr. G. Cottam.—For trial.

No. 6.—Messrs. Barrett, Exall, and Andrews, Reading.—A wheel plough, of their own invention.—For trial.

A double furrow plough, of their own invention.—For trial.

A swing plough, of their own invention.

A subsoil plough, of their own invention.—For trial.

A turnwrist plough, of their own invention.—For trial.

No. 7.—W. E. Hill, of Brierley Hill, Dudley, Staffordshire.—1 wrought-iron field gate, for farm purposes.

1 Ditot ditto ditto.

1 Ditto cow crib.

1 Ditto sheep rack, on wheels.

12 Ditto hurdles for sheep, cattle, deer, and other fencing articles.

No. 8.—Mr. Edward Dean Falkner, of Fairfield, near Liverpool.—A plough, for two horses, yoked singly or abreast, for general purposes. Having a wheel on the beam, which may be set to gauge, thus insuring a furrow of even depth, as well as decreasing the draft: or, like the coulter, it can be disengaged entirely, leaving a common swing plough. In the set of the stilts and beam, this plough partakes of the Lothian, whilst the sock breast and mould board are held to be an improved form of the old Scotch plough (formerly known as Hamiltons), the rake and curvature thereof favouring the draft by easing the pressure on the hinder part of the mould board by the slice of earth turned over.

A light plough (10½ stones), for one horse.—Of less dimensions, but nearly the same construction as the foregoing, except that it has no wheel on the beam, which has a strengthening flange on the furrow side, to allow of two horses being yoked if required.

A double mould-board plough, for ridge husbandry.—With expanding mould-board, on an entirely new construction, having levers, whereby the ploughman can, without leaving the stilts, expand the mould boards into five different positions. Both sides of the bottom plates have flanges of steel, which induce a steady hold in light or sandy soils; and like the above, has a wheel on the beam, which may be set to gauge or detached.

An expanding horse hoe, of a new construction.—With three moveable skim coulters for working between drills, on a flat surface, or one skim and two curved coulters for working between ridges, with expanding harrows behind for cleaning and extracting weeds; and also, like both the above, has a wheel on the beam set to guage.

A pair of arched harrows for clearing weeds from the ridges of potatoes, &c.—With a wheel and lever to regulate the pressure, and clear the teeth if any tendency to choak with weeds should occur. The teeth are moveable, and the centre ones may be taken out when the harrows are used after the plants are up. All these are the invention of Mr. E. Brayton, of Dykesfield, near Carlisle.

No. 9.—Messrs. Garratt and Son, of Leiston Works, Saxmundham, Suffolk.—Drill for corn and general purposes, No. 34, B.—This drill will deposit skilfully, upon the most tenacious clay, or rocky soils, or upon the most hilly lands in cultivation, with as much regularity as on the more fertile plains, any description of pulverised manure per acre from 6 bushels to any larger quantity, any corn from 2 to 26 pecks, and (by simply changing the barrel) turnips and every vegetable seed from 1 to 12 pints per acre. Corn and manure may be deposited together down the same conductors, or through separate coulters which are provided to follow; and it has been ascertained to be very beneficial to the root crop that the seed should be above the manure. The grass seed engine accompanying this drill is applicable to sow at the same time with spring corn and manure, and will do its work as correctly as when used singly; thus the whole business of manuring, corn and grass seeding, is ably performed in one process. By the aid of the swing steerage which is attached to this drill, it may be guided to a nicety to join the work in returning.

A 13-coulter, No. 12, iron lever corn drill with a turnip and mangel wurzel barrel.—Adapted to all descriptions of soil and for the most hilly cultivated lands, with a lightening apparatus to act upon both sides, so that the drill may be worked from alternate ends, to regulate the seed equally when going up or down hill; and the box is so partitioned as to keep the delivery regular when drilling on side hills: this drill has a grass-seed apparatus attached, same as before described to drill No. 34, B.

A 13-coulter corn drill, same as above with wood levers.

A 10-coulter, No. 9, corn drill, same as above with wood levers.

Turnip and manure drill, 37, B.—A 4-coulter lever seed and manure drill with a slip axletree to vary the drill for different widths of ridges, from 24 to 36 inches, and a swing steerage, so that the man following the drill may guide the coulters on the tops of the ridges; and with four coulters on stetch or broad work, the rows of seed may be deposited as near as 12 inches to each other. This drill is so constructed that turnip and mangel wurzel seeds are taken up by the cups separately, and deposited together down the conducting apparatus, to prevent any unequal mixture of the seeds.

Turnip and manure drill, No. 36, A.—A 2-coulter lever seed and manure ridging drill for one horse drafts, with separate coulters for seed and manure, with pressing rollers which form the land into ridges to precede the coulters, and a second roller to follow the coulters and close the rows. Each lever is made to work independent of the other, so that the coulters may be guided to the greatest nicety on the tops of the ridges. The manure is delivered from the box by a cupped cylinder, which is made to revolve either way, for the better convenience of depositing wet manures; the manure is also regulated from the top of the box, so that the man walking behind the drill can alter the quantity as he requires, while the horse is going. This drill is made with iron levers for the purpose of horse hoeing, the hoes being substituted in the place of the drill coulters; and each lever being made to work independent, the ridges may be hoed with the greatest accuracy.

A newly-invented thrashing power.—A perfectly constructed machine for thrashing wheat, without either bending, or in any degree injuring the straw, which is considered of importance, and will be found most essential to the agriculturists residing near large towns, where the straw is sold, or when it is required for thatching, or any other particular purpose. This implement is worked by their original portable, 2, 3, or 4-horse-power machinery.

Hay making machine, for strewing grass by a moveable and revolving barrel, with shafts and wheels for horse work.—To compete.

Bean mill, on frame, with wrought case-hardened barrel, to crush beans, peas, barley, and malt,—for hand or horse work.

A newly-improved turnip cutter.

Ploughs.—3 foot ploughs, for two horses' draught, for different soils. 4-Wheel plough, for two horses draught. Double Tom plough, for earthing up plants and opening water furrows. Northumberland ridge plough. Northamptonshire wheel plough, with double hoes. Rackheath swing subsoil plough.

Improved portable thrashing machine, No. 49.—This machine is particularly worthy the attention of agriculturists, for its accelerative powers, nicety of work, and saving of horse labour; it will thrash clean any kind of corn with four horses, as much as sixty imperial bushels per hour, without injuring the kernels, and by merely substituting another concave which is provided, it will, with only one or two horses, effectually draw clover, suckling, or any other small seeds. It is so portable that two men may set it down, or take it up, in half an hour, and two horses will remove it easily from place to place upon one pair of travelling wheels. The manufacturers have lately effected various important improvements in this machine, and among the most particular are the following, viz.:— The iron-rimmed horse wheel made for segments, so that when the teeth are worn or accidentally broken, one or any number of parts may be replaced by the attendant of the machine, without a mechanic. The entire iron drum made with five peculiarly formed wrought-iron beaters, occupying less than the space of four wood beaters, thus giving one fifth more thrashing power without increasing the speed; this drum is also much more readily repaired. The moveable bridge, or cover for the leading bar, that the horses may step over without a possibility of injury; this addition is particularly essential when the barn or floor upon which the thrashing power stands, lies higher than the horse work. The arrangement for attaching the leading bar to either sides of the thrashing power, so as it may be used with equal convenience from either sides of the barn or stack.

Patent horse hoe.—This implement is so complete in itself, as to be fully suited to all methods of drill cultivation, whether broad, stetch, or ridge ploughing; and is adapted to hoeing corn of all sorts, as well as roots. The peculiar advantages of this implement are as follows:—It may be increased or diminished in size to suit all lands or methods of planting; the axletree being moveable at both ends, either wheels may be expanded or contracted, so as always to be kept between the rows of plants. The shafts are readily altered and put to any part of the frame, so that the horses may either walk in the furrows, or in any direction to avoid injury to the crop. Each hoe, or each pair of hoes, works on a lever independent of the others, so that no part of the surface to be cut, however uneven, can escape: and in order to accommodate this implement for the consolidated earth of the wheat crop, and also the more loosened top of spring corn, roots, &c., the hoes are pressed in by different weights being hung upon the ends of each lever, and adjusted by keys or chains, to prevent them going beyond the proper depth. What has hitherto been an insuperable objection to the general use of the horse hoe is overruled in this, by the novel and easy method of steering, so that the hoes may be guided to the greatest nicety, if common caution be used, doing every execution among the weeds, without injury to the crops. This implement is so constructed, that the hoes may be set to any width, from six inches to any wider space. For the purpose of hoeing all kinds of corn, the inverted hoes only are preferred; but for the root crops, where the rows of plants are wider (say eighteen inches or more), an extra hoe, of a semicircular form, is placed in a separate lever, working between and in advance of the two inverted, for the more effectually cutting all the land, however uneven the surface, by the three separate hoes working independently of each other between the rows. The hoes are of peculiar improved manufacture, the blades being of steel, made separate, and attached to a stalk in a simple and easy, yet effectual manner, so that any husbandman may replace them, and being manufactured by the patentees at an exceedingly low price, no difficulty can arise in replacing those parts subject to wear; and lastly, by an easy contrivance, the whole of the levers are altered up or down at one time, in order to set the hoes deeper or fleeter, as occasion may require for hard or loose land.—For competition as a new implement.

A horse drag rake, for the purpose of raking up hay or corn on any surface, however uneven, each lever being made to work independent of the other: the teeth are cleared by being attached to a pair of eccentric pullies which are moved by pulling down a simple lever handle behind the rake, which raises the tines level with the frame.—For competition as a new implement.

Iron field roll, made with three separate revolving cylinders, for the greater facility of its turning without injury to the crops. The shafts are made to shift to any part of the frame required to suit either stetch or broad work.—For competition as a new implement.

Clod crusher, made with cast-iron cylindrical wheels, with teeth of a peculiar form, for the purpose of crushing clods, and pulverizing lands, placed upon iron travelling wheels regulated by screws to any regular depth, so that the wheels are at all times attached to the implement, whether suspended at work or conveying the implement from place to place.—For competition as a new implement.

Chaff cutting engines, an improved twelve-inch wide wheel motion, for cutting fodder for cattle, to be used with two cranks by hand, or with one or two horses; so constructed as to cut a feed of any irregular thickness between half and five inches, and to be easily set to make different lengths of chaff.—To compete. An improved ten-inch wide, same principle as the preceding. A middle size, one crank, for hand work only.—To compete.

Corn dressing machines, fifty-six inches high, with five sieves and straight wired jog screen, effectually to separate the chaff from the corn. Forty-five inches high, same as above.—To compete.

Winnowing machine, to be used after the dressing machine, for rectifying the sample of corn by blowing out all dirt, small seeds, or light kernels.—To compete.

Cake crushers, on frame, with heavy fly-wheel, to break fine for manure, or coarse for feeding cattle. Another on a frame, for breaking fine or coarse for cattle.—To compete.

A horse hoe, a horse rake, a harrow, hay-making machine, all invented by Mr. Richard Garrett.—For trial.

A drill for corn and general purposes; a turnip and manure drill.—Invented by Mr. Richard Garrett.—For trial.

Subsoil, double furrow, wheel and swing ploughs.

Mr. Everett, of Chase-side House, Enfield, Middlesex.—Two rollers, or implements for breaking clods.

A new hoe, or weed irradicator.—Exhibited by Messrs. Garrett and Co.

No. 10.—Mr. Thomas Huckvale, of Over-Norton, Chipping-Norton.—A turnwrist plough, of his own invention.—This newly-invented implement very much resembles the common plough in appearance, its novelty consisting in having a double-acting share, which, with the mould board, is easily turned from one side to the other; all the wearing parts are of cast iron, which can be easily renewed; this renders it a strong and an economical implement.—For trial.

A turnip and manure drill, of his own invention.—For trial.

A set of implements, combining a manure and turnip drill, a fluid drill and a horse hoe, for hoeing and thinning turnips, invented by himself.—For competition as a new implement.

A set of patent implements, for cultivating turnips.—Consists of a manure and turnip drill, a fluid drill, and a turnip hoe, all fixed upon one frame, hence a great saving of expence to purchasers. The improvement in the manure drill consists in a new plan for throwing out the ashes or bone dust, which it collects with great accuracy, and is easily altered from a small to a larger quantity. The fluid drill is intended to apply a fluid mixture to preserve the young turnips from the fly, and is well calculated to drill liquid manure. The horse hoe will hoe or thin two rows at the same time, and will work very near to the plants without injuring them.

Two horse hoes, of his own invention.—One is intended to hoe and thin turnips on the ridges. This implement has a set of revolving knives for throwing the turnips, and the hoes are so placed as to work very near to the plants. The other is intended to hoe and thin turnips on the flat, and is so formed as to be held correctly, although the horse may not go in the proper line.—For trial.

Broadcast, or drilling machine, for turnips, grass-seeds, or grain.—This implement will sow broadcast, or drill turnips, grass-seeds, or grain; and the improvement consists in its answering so many purposes, and the effective manner in which it works: it can be easily altered from a drill to a broadcast machine by removing the levers, which are fastened in a simple manner: and, having a wheel at each end, it can be steered with the greatest ease. Of his own invention.—For competition as a new implement.

No. 11.—Mr. Thos. Biggs, of 15, Crawford-street, Portman-square, London.—A sheep-dipping apparatus.

No. 12.—Mr. T. Foster, of Stourbridge, Worcestershire.—Assortment of spades.

No. 13.—Mr. Benjamin Wright, of St. Nicholas, near Cardiff.—A harrow, the invention of Mr. David, of Radyr.—For trial.

A set of iron swingle trees, peculiar for its lightness and strength.

A gate, peculiar for its strength.

No. 14.—Mr. Charles Reville, of Lincoln.—A dressing and blowing machine.—To compete.

An assortment of implements.

No. 15.—Messrs. Ransomes, of Ipswich.—Portable and Locomotive Steam Engine, for Agricultural purposes, with Thrashing Machine attached.

The steam engine is made by the Disc Steam Engine Company, of Birmingham, and is on their patent disc principle. It was exhibited at Liverpool by J. R. and A. Ransome last year, attached to one of their thrashing machines, since which it has undergone some improvements, to render it clear of all danger from the fire or sparks, so that it may be used in a farm yard with safety. The principle of the disc steam engine is a novel but a very simple one, and not likely to be out of order. It is fixed upon a four-wheeled carriage, and will travel as a locomotive engine at from 4 to 5 miles per hour, on common roads, or it may be drawn by 2 horses if preferred. The thrashing machine is also one on a simple principle, similar to those exhibited by J. R. and A. Ransome at the Cambridge and Liverpool Meetings of the Royal Agricultural Society, with one-fifth more power, those being for 4 horses, and this for 5 horse power.

Ransome's Portable Thrashing Machine, 4-horse power.

This Machine is in a form familiar to Agriculturists, and little need be said in explanation of its construction. It is manufactured in a superior style of workmanship so as to combine durability with effective performance: to this end, the large iron horse-wheel is turned true in a lathe at that part upon which the friction wheel runs; and the requisite speed of the drum is obtained by three pairs of wheels instead of two only, as was formerly the case; but which was found to involve great loss of power and wear of the machinery. Considerable saving of power is also made by the use of a new form of tooth in the wheels, which combines increased strength with decreased friction, and consequently greater durability.

Ransome's Portable Thrashing Machine, 2-horse power.

This machine is similar to the above, but smaller, and may be used with either two or three horses, as may be preferred.

Ransome's Portable Thrashing Machine, 1 horse, or for hand power.

The barn-work of this machine is similar in its construction to the one exhibited and tried at the Liverpool Meeting. Vide Report R. A. S. E. Journal.

The horse-work is, with the second motion, complete in one frame, and requires no other fixing than to be set down in the place where it is intended to be used. The barn-work is packed upon the frame of the horse-work, and the whole, mounted upon a pair of wheels, may be drawn by a single horse. The same horse-work is equally applicable to a chaff engine, which may be loaded and packed on the same carriage in a similar manner.

Ransome's Hand Thrashing Machine.

This machine has recently undergone several improvements in the details of its construction, and may be strongly recommended as a very efficient hand machine. It may, if required, be fitted with gearing to be worked by horse-power.

Ransome's Patent Chaff Engine, marked A.

This machine is worked by two horses, and will be found to combine in its construction the best points of the former machine; the motion is smooth, and the length of cut can be readily altered, from $\frac{1}{4}$ to $\frac{1}{2}$ or $\frac{3}{4}$ of an inch, by the gear wheels which are attached to the spindle.

Ransome's Patent Chaff Engine, marked B.

Admits of alteration in the cut on a similar principle to that of the above, but exhibits a novel improvement in the action of the presser-plate, which, instead of being confined to the usual perpendicular motion, is so contrived as to follow closely the circle described by the circumference of the rollers; and thus, by constantly pressing the portion of the hay or straw about to receive the cut, whether this portion may be thin or thick, it avoids all liability to choke the machine when too large a portion of the hay may be forced in, while it will sufficiently press a thin quantity. This instrument may be used with one horse.

Horse power for either of the before-mentioned machines, and is applicable to one or two horses.

Ransome's Chaff-Cutting Engine, No. 15,

Varying to the following lengths of cut:—$\frac{1}{4}$ in. $\frac{1}{2}$ in. and $\frac{3}{4}$ in., adapted for horse power, and fitted to the horse-work.

Chaff-Cutting Engine, similar to the above, fitted for Hand Power.

Chaff-Cutting Engine, on the same principle as above, but smaller.

Small Chaff Engine, with 2 Knives, and cutting half-inch only, suited to Gentlemen's Stables and small Establishments; made entirely of Metal, and adapted for Hot Climates.

Small Chaff Engine, the same in principle as the above, but with Wood Box.

A Double-Motion Hand-Power, to increase the speed of Chaff Cutting, or other Engines.

Mill for Grinding Beans, Peas, Oats, Barley, and Malt, with Steel Rollers spirally cut.

This mill is recommended by the makers, as a perfect one for either of the above purposes, for it is effectual in its operation, easy to work, and quick in its performance.

The introduction of Rollers, cut spirally, to mills of this description, has arisen from the ingenuity of previous makers, and they work so well, that it is probable they may become general; but in the present mill the makers have continued a very simple and perfect plan for keeping the rollers perfectly parallel under the circumstance of any required alteration of their distance from each other. This mill is adapted to horse power.

A Mill, the same as above described, only smaller, and adapted to Hand Power.

Linseed Crusher.

Norfolk Crusher, calculated to crush Oats, Malt, or Barley.

Linseed or Rape-Cake Breaker, for Cattle or Manure.

Biddell's Scarifier.

This is a very powerful implement for the purpose of cultivating land under a variety of circumstances, and bringing it into a proper state of tilth, much more effectually, and at less expense, than can be done by the means generally employed for that purpose.

Biddell's Extirpating Harrow.

This is particularly adapted for cleaning pea and bean stubbles, breaking up such land as is too hard for the heaviest common harrows, and for bringing winter fallows into a fine state for receiving spring corn; it is also eminently calculated, in working summer lands, for raising short grass to the surface, as well as for general purposes of fine tillage, and cleaning land. The tines of this implement, in their work are only four inches apart; and as steel hoes of that breadth are made to fit the tines, close shallow hoeing may be well performed. The weight of this implement, at first sight, may appear an objection, but which, on trial, will be found to be advantageous. The weight is borne upon wheels upwards of four feet high, and consequently there is not that labour to the horses in drawing it that would otherwise be the case.

Ransome's Suffolk Cultivator.

This implement is on a smaller scale than the two above mentioned, and combines the advantages of each. The teeth, or tines (eleven in number), may be used either with chisel points or hoes, for the purposes of the extirpating harrow; and by removing four of these it is brought into the form and to the proportions of Biddell's Scarifier. By means of a circular rack and pinion it is easily regulated to any required depth; and if a different pitch or depth be required for the forward teeth in very hard land, it may at once be easily attained by an alteration at the fore part of the instrument, which will be obvious to the man using it.

Grant's Patent Lever Horse Drag Rake, manufactured under license from the Patentee.

Beart's Patent Tile Machine, manufactured by J. R. and A. Ransome, under license from the Patentee.

This invention reduces the cost of making tiles for draining very considerably; and by it from 15 to 18,000 may be made per week.

Ransome's Ploughs.

Rutland Plough, with Wood Beam and Handles.
Ditto ditto ditto.

Cambridgeshire Plough, with Wood Beam and Handles.
Ditto ditto, Wrought Iron ditto.

New Patent Hollow Iron Beam Plough.

This plough is made entirely of iron; the beams and handles are made of plate iron, formed in dies; the curved form of the iron gives it peculiar strength and stiffness, while, at the same time, the weight is less than that of wooden ploughs. Attention is requested to a means of altering the pitch of the share, which may be immediately adapted to enter any description of land however hard. The coulter fastenings are also new, and will be found to combine great simplicity and facility of alteration, with peculiar strength and stedfastness.

A Hollow Beam Plough similar to the above, but much lighter,—adapted for 1 Horse.

A Plough (marked W. L.), similar to the Rutland, but adapted with a contrivance for altering the pitch and adjusting the point of the Share.

Strong Wrought-Iron Plough, fitted for Exportation.

Kent Turn-Wrist Plough.

An improved plough on the principle of the Kent Turnwrist, made under the direction of Wm. Smart, Rainham. The Ploughman can, without difficulty, shift the rest and coulter without leaving his place at the handles of the plough, and can almost as easily effect any alteration in the "dip" of the plough.

A Double Furrow Plough, made for P. Pusey, Esq., similar to the above, but with Mould-Boards in form like No. 1, and made of steel.

A Universal Ridge Plough.

This is adapted to the several purposes of ridge culture, and one plough admits of all the variations as under;—
A Universal Plough, as a Double Tom or Ridge Plough.
Ditto Moulding Plough.
Ditto Horse-Hoe, or Cleaning Plough.
Ditto Skeleton, or Broad-Share Plough.

A Rackheath Subsoil Plough, invented by Sir Edward Stracey, with improvements by J. R. and A. R.

No. 16.—Mr. Richard Hornsby, of Spittlegate, Grantham, Lincolnshire.—Drill for corn and general purposes.—Of his own invention.—Twelve coulters and iron levers, on an improved principle; being fitted with guides for the levers behind, so that the coulters cannot get at unequal distances. If a horse hoe can be used with advantage after any drill, this principle must be right. Also, a stirrer on an improved principle, to bring down damp ashes or other pulverized manure, difficult to deposit with a rotary motion, which can be used as a common stirrer, or give it an eccentric motion, so that, as the points of the stirrer revolve, they rise up the box with the manure, and are so arranged, if the manure comes down too fast, that the man managing the drill can, by the use of a lever, stop the stirrer instantly, and set it to work again as soon as required.—For trial.

Turnip and manure drill, of his own invention, upon rollers, for ridge-work of different widths, varying from twenty to twenty-eight inches apart.—For trial.

Drop ridge drill, of his own invention, upon rollers, for ridges, varying from twenty-one to twenty-seven inches apart.—For trial.

Corn and seed drill, of his own invention. Twelve coulter drill machine, with iron levers, swing-steerage, and guide on the press bar, to prevent the coulters drilling unequal distances.—For trial.

Small seeds drill, of his own invention. Twenty coulters, iron levers; will work well at three and a quarter inches apart.—For trial.

Land presser, two rows fitted to drill corn.—For trial.

An assortment of implements.

No. 17.—Messrs. Henry and Thomas Proctor, of Bristol.—A drill, single furrow, manure, and turnip, or the ridge.

A drill, two furrow, turnip, and manure;—four furrow, corn and manure.

A drill, three furrows, turnip and manure.

A drill, four furrows, turnip and manure;—eight furrows, corn and manure.

A plough.
A turnip and hay cutter.
A Crosskill's patent clod roller, large size.
A ditto, ditto, ditto.

No. 18.—Mr. Crosskill, Beverley Works, Yorkshire.—Scruffler.—This is a very simple implement for cleaning one row of turnips or potatoes. It is used by one horse and one man.

Potato steamer.—This is a very simple steamer, a strong lad being able to remove the apparatus when full, and empty the same; its adaptation to iron pans that can be used for other purposes, its being portable, and a slight expense. By steaming turnips for cows, it will be found to take the turnipy taste from the butter.

Liquid manure cart.—A liquid manure cart is improved by a new plan for a spreading board, to which is attached an apparatus to water two rows of turnips any required width. The body of the cart is made of cast iron, and holds about two hundred gallons. W. C. has also added Bear's patent pump, without increasing the expense, which cannot possibly choak or get out of order.

Improved two-horse power hay and straw cutting machine, warranted to cut two hundred bushels per hour.—The improvement is in bringing the knives very near the rollers, which is accomplished by doing away with the throat, thereby preventing the machine from choaking. These simple dressing machines, when well made, have not, hitherto, been surpassed for durability, price, or, above all, in dressing all kinds of grain as well as any other machine in use. It is light work for one man to turn the machine.

Patent clod roller.—This implement has become valuable for rolling wheat as soon as sown, and is found much better than the tedious operation of the pressers upon light soils, and also in rolling wheat upon light land in the spring, after frost. For crushing clods, and breaking up strong land to a fine mould, with by far the smallest amount of labour than by any other means, which has the advantage of always making sure of a sowing season in dry weather. To roll corn that is three or four inches out of ground, upon land infected with the wire worm, is a complete remedy, and will save the crop from destruction. Price, 6 ft. 6 in., 21*l.*; 6ft., 19*l.*; 5 ft. 6 in., 18*l.*

Horse hoe.—To hoe six or eight rows of corn or three of turnips; it has cast iron socks, they can be adjusted to any width. This implement can only be used where the corn is drilled a good width and well done. A very great saving will be the result of using these implements.—For trial.

Drill for sowing soot; of his own invention.—This drill has been tried upon the Yorkshire Wolds. It answers well, even when the soot is damp; it sows the soot broad cast and very near the ground, so that it can be used either in windy or damp weather. The inventor found great difficulty in getting it to answer perfectly, and although it is a very simple machine, it was ascertained that a very slight alteration from its present construction prevented its working properly. The box holds eight bushels of soot, and is regulated by wheels to sow any required quantity per acre.—For trial.

A two-wheeled presser with drill for seeds and manure.—Its use for the wheat season is practised upon the Yorkshire Wolds as follows:—with two horses, one man to lead, and one man to attend the drill, they follow two ploughs; the two pressers are set so as to press the edge of each furrow, which forms a solid bottom and prevents the seed being deposited too deep. There is a saving of one fourth of seed by this practice, it is a great preventive of the seed turning out by the frost, and makes the corn in a good state for horse heeing. For spring corn, either upon turnip or seed land, the same process and results as to pressing, with the addition of drilling the manure, such as bones, rape dust, or any other portable manure.—For trial.

Single-row turnip drill.—This drill is much used by small farmers in Yorkshire. It is a compact simple machine for a small sum. The iron lever on the side of the drill is to throw the wheels in or out of work. This drill will sow from twenty to forty bushels of bones, or other pulverized manure, per acre, as wanted, with the same cups; by drawing the box with the iron lever fixed to it, to the hindmost part of the drill, it sows more; and by moving it forward, less. The slide to the box is also drawn up or down, to assist in depositing the quantity required.—For trial.

A patent grass land cultivator.—The mechanical operation of the instrument consists in the cutting a series of grooves, about six inches asunder, or any width a more extended practice may find to be the best; and any depth that is suitable to the nature of the soil, and the kind of manure intended to be used. The cutters being attached to a lever, can be adjusted in a moment in the event of their being choaked with long grass, &c., and to the machine is fixed a simple self-acting drill, by which the manure and seeds are deposited, and the land afterwards rolled; in this manner the manure is secured from the enormous loss that is inseparable from the ordinary method of applying manures, and the seeds are ready to be acted upon by rain and sunshine.—For competition as a new implement.

A portable saw mill, with grindstone and boring augers.—This machine can be worked by the horse part of the four-horse portable thrashing machine; it has boring augers attached, and also a grindstone, all of which can be used separately or at one time. The particular claim of merit or novelty in this machine is its lightness and adaptation for being removed into woods or plantations for making posts and rails, cutting poles for rustic cottage buildings, &c., or any purposes where light sawing may be required, and where its use may only be wanted for a short time.—For competition as a new implement.

A single horse cast-iron cart.—Being adapted to hot climates, and may be found useful for the colonies, where wood is not durable, on account of the heat. The cast-iron, from the same cause, would be tough, and thereby safe and durable with hard usage.—For competition as a new implement.

A thrashing machine.—The improvements are a new mode of adjusting the concave drum, which is effected by four grooved plates fixed outside the machine, into which slides a square guider fixed to the concave; this guider is regulated by a screw that works on the outside of the machine, and so fixed that the concave cannot be got too near to the drum: thereby removing the principal cause of breakage in all thrashing machines.—For trial.

No. 19.—Mr. John B. L. Farrant, of Maidstone.—A single hand turnip drill, with manure drill attached, of his own invention.—For trial.

A hoe or break for beans and peas.—Invented (with the exception of the manure drill attached, for turnips, at pleasure) by Mr. Thomas Spencer, of Wrotham, Kent.—For trial.

A thrashing machine.—Worked by four men or *a pony*, at pleasure, will average from 4 to 6 quarters of wheat per day, and from seven to ten quarters of peas, barley, or oats. The power for a pony, which is also applicable for a chaff engine, corn bruiser, or oil cake breaker.

A small clod breaker.—Suitable for hop gardens or fallow land, work *by one horse*.

Read's patent safety riding or driving reins.

No. 20.—Mr. Joel Mansfield, of Sherborne, Dorsetshire.—Two machines for cleaning corn, invented by himself.—To compete.

Specimens of various wire-work, constructed for winnowing machines.

No. 21.—Mr. Richard Stratton, of Bristol, on the part of Mr Wilkie: these are not for competition—Twelve waggons, fifteen carts, two liquid manure carts, two hay-making machines, two winnowing machines, four chaff machines, five turnip cutters, three scarifiers, four ploughs, four horse-hoes, three turnip drills, four wheel-barrows, two garden rollers, three iron field-rollers, two iron buckets, two butter churns, two pair harrows, three iron pig-troughs, two fire-engines of various descriptions, one kibbling mill, one bean mill, one oil cake crusher, one barrow seed drill, one three-furrow corn drill, one three-wheel water barrow, one pair drags, a stand of models, three tipping waggons of various weights and sizes, but on the same principle of tipping or discharging its load with as little difficulty as a cart.

One other waggon, with equirotal wheels, cross-locked, and constructed for harvest waggon. These are of his own invention.—For competition as a new implement.

No. 22.—Mr. Mark Rosser, of Compton, near Bristol.—Iron plough, of his own invention.—For trial. Its peculiarities are: it is to be worked by two, three, or four horses, according to the state of the soil; the horses may be either single or two abreast, and requires one man to hold it. It has a wheel and skimming shear to take off the turf, if required; will work without the wheel when the skimming shear is not used; has a joint turn furrow, which can be fixed wide at the tail when despatch or the looseness of the soil requires it, and narrow when required to plough in wheat, or pass easily through stiff soil.

One small hay-fork, of a new invention, intended for the lighter parts of hay-making.

One small and one medium size hay-fork, combining strength, lightness, elegance, and a capacity to enter and deliver the hay or corn easily. The composition of metal with which they are manufactured is Mark Rosser's invention.

No. 23.—Mr. Barnabas Ury, of Orchard-street, Newport, Isle of Wight.—A thrashing machine. The peculiarities of this improved four-horse power portable thrashing machine are comprised under the following heads, viz.:—1. The simple-constructed method of the horse works, remaining only on two carriage-wheels while at work, preventing those accidents liable in lowering and rising these outer works to the ground; also preserving the wood work from decay, with the quick and easy manner of puting it to work and packing for travelling. 2. The friction of the universal joints are decreased by the application of oblique angled cog-wheels, and the connecting shaft kept at any height from the ground. 3. The simple method of keeping the horse-works fixed while at work, the horse-wheel, shaft, &c., being behind the centre of the axle-tree, which acts as a centre balance to the inner works when packed for travelling. 4. The simple contrivance of adjusting the horse levers to unlevel ground, without disturbing the machinery. 5. The velocity with which the drum is speeded, which ensures clean thrashing without injuring the straw or grain, as the beaters are made rounding, like the flail, with long apertures in the concave, to let the grain through instantly upon coming out of the ears. 6. The simple, effective, and correct manner in the manufacture of the concave, as each bar of the same, which is of peculiar form, is adjusted to the beater of the drum, by which method the interior part is perfectly true, which is highly necessary in a machine working without feeding rollers. 7. The easy method of setting the concave to its work for thrashing, which is done by the feeder itself while at work, similar to millers adjusting the mill-stones. 8. The advantage of a level feeding-table, by which means the feeder prevents the risk of choking, by stones or otherwise, so frequently the case with those that are fed in a perpendicular direction. 9. The small and convenient size of the machine for small barns and porches. The basement is 4 feet 3 inches by 3 feet, with all stages breast high, not exceeding 6 feet 6 inches square, with one on the inner side completely open for taking out the grain, as the fly wheel is removed to either side (drawing the drum at either end) in less than two minutes, without moving nuts or screws, or taking out the spindle.—For trial.

A two-men power hand thrashing machine.—It is in every way upon the same principle of construction as the before-mentioned four-horse power portable thrashing machine, excepting the horse appurtenances, and will occupy a space of seven square feet.—For trial.

No. 24.—Mr. Thomas Wedlake, Horn-Church, Essex.—Hay making machine, of his own invention, and is constructed upon a principle different from any other introduced to the public, being made in a double cylinder, and has the advantage over the old system, of having a cog-wheel on each end of the cylinder, through which the horse can draw regularly; whereas on the old plan the stress lay upon one shoulder of the horse, and, in addition to this, they were constantly clogging and choking; but by this method it works much lighter for a horse, which is desirable; it never chokes, be the crop ever so heavy; and the substantial and simple manner of its construction renders it not in the least liable to get out of order.—For trial.

Wedlake's nine-hoed scarifier.—This implement is for the purpose of scarifying and cleansing the land, and answers a second ploughing. The hoes, or tines, are made of various shapes and sizes, suitable to the work intended to be done. It has the advantage of the depth, being regulated while in work, to suit the depths of soil, which renders it very efficient.—For trial.

Wedlake's chaff cutter with concave knife.—This machine, by adjusting the ketch lever, is calculated to cut different lengths from one-eighth of an inch to one inch, without altering any other part of the machine. It will be found to be made upon a strong and useful construction, being worked with a pair of spur wheels instead of a crank, which gives it a more uniform motion.

Iron chaff cutter with convex knives.—With this machine a man may cut hay, straw, or peahaulm into different lengths; it will not choke up, which is a very important point. It also has an auxiliary power to assist occasionally if required. This implement will be found very advantageous to be sent to the Colonies, as it can be taken to pieces and packed, the box forming the packing case, which to the purchaser is of great consideration. It also answers well for cutting cane tops.

Subsoil plough.—This plough is intended to follow the common plough, and is calculated to work upon any soil; it can be used with either two or four horses. There is an index upon the side of the plough to show the number of inches it is in depth under the earth. There is also a screw in front for adjusting the depth, which is of his invention, and it is considered a decided improvement.

Horse hay rake, for hay, corn, or stubble.

Rape cake breaker.—This rape cake breaker is of his invention, and it is intended to break the cake for cattle, or pulverising it for manure. It is made with two sets of rollers, and is worked by one or two men; it will break the cake very quickly, and will be found a very useful and substantial machine.

Turnip drill with rollers to sow on bouts.—This implement is drawn by a pony; the rollers are placed before the coulters and rolls the land; the rollers contract or expand, so as to always keep the coulters to the centre; when at the ends of the land a lever is raised by which means it stops the sowing till you get on to the bouts again. There is a chain attached behind to cover the earth over the seed.

Wedlake's broad cast seed machine.—This machine can be made of different lengths, 8, 10, 12, or 14 feet, according to the lands. The box is put upon a frame, and wheeled by a man like a barrow, and when turning at the ends of the field, it can be stopped sowing in an instant by a striking lever, which prevents the seed being wasted. It is for the purpose of sowing turnip seed, rye grass, clover, &c.

Wedlake's three-hoed scarifier. This scarifier is drawn by one horse, to be used between peas, potatoes, &c. It has hoes, or feet, wedged on the wrought-iron stock, and they are so constructed as not to cut the fibres of potatoes or other plants; and when the hoes get blunt or worn out they can be easily removed, and others supplied in their place instead of sending it off the farm to be repaired.—For trial.

Wedlake's oil cake breaker.—Of his own invention, and will be found a very generally useful implement. It is so constructed that a lad may turn it the whole of the day without being the least fatigued. It can be used for beast or sheep, and will break about twelve cakes per minute.

No. 25.—Messrs. Saunders and Williams, of Bedford. Five ploughs, one scarifier, set of harrows, a horse rake, two chaff machines, and a turnip cutter.

A set of harrows of their own and Mr. Taylor's invention.

A horse rake, of their own and Mr. Taylor's invention.—For trial.

A scarifier, of their own invention.—For trial.

A turnip cutter.—To compete.

Two improved chaff machines, with eccentric motion, and work remarkably easy; their own invention.—To compete.

A plough marked G O.—A plough marked B C.—A plough marked S W.—A plough marked R D.—A plough marked RN; all own invention.—For trial.

No. 26.—Mr. Alex. Dean, of Birmingham.—Patent hydraulic machine, for irrigating land with liquid manure, watering streets, roads, carrying off water after floods, and for draining fens or marshy land. It may be instantly converted into a fire engine of immense capability, thus combining in one useful agricultural machine, the most economical means of preserving the roads, and the best protection against the attacks of the incendiary.—For competition as a new implement.

Patent portable steam mill of two-horse power, consisting of a steam engine and flour mill, warranted to grind and dress from eight to ten bags of wheat per day; also a corn crusher, and bean splitter of equal power; the whole upon wheels, standing within a square of four feet six inches. Price, including the boiler, 70*l*. The engine is of very simple and powerful construction, and when attached to a thrashing machine will perform the work of three or four horses. It may also be had separate from the mill for 48*l*., including the boiler, and is recommended as a most portable and useful agricultural engine.—For competition as a new implement.

Patent portable mill, to be worked by two or four persons, horse power, steam engine, &c., for grinding wheat or barley meal, crushing oats, splitting beans, and knibbling all sorts of grain.—For competition as a new implement.

Patent hand flour mill.—This mill will grind and dress at one operation, nearly double the quantity of any other mill, at the same price. It is extremely simple, working without gut or band, and the grinding surfaces are scarcely affected by the wear of years.—For competition as a new implement.

Patent wheel, suitable for carts, waggons, and other road carriages.—For competition as a new implement.

Corn crusher, to crush oats, split beans, grind malt, knibble Indian corn, &c.—These corn crushers are recommended for durability, cheapness, and general utility, and require no skill in adjusting to suit any description of grain.—To compete.

Bean splitting mill.—This mill will perform more work than any mill hitherto made.—To compete.

Patent hand dressing machine.—For dressing flour and other pulverized substances.

Thrashing machine, of four-horse power.—All these are his own invention entire.

No. 27.—Mr. Robert Law, of Shettleston, near Glasgow.—A lea plough, of his own invention.—For trial.

Two green crop cleaning drills, of his own invention.—For trial.

A horse hoe, of his own invention.—For trial.

A chaff cutter, of his own invention.—To compete.

A corn and bean bruiser, of his own invention.—To compete.

An assortment of implements.

A new implement, Smith's subsoil improved, to answer the double purpose of trenching; that is, to trench going the one way, and subsoil coming back the other way.—To compete, as a new implement.

A drill plough, with horse hoes attached.

A green crop harrow.

A machine for bruising grain for cattle.

A cutting machine.

A turnip sowing machine.

A Scotch coup cart, with hay frame.

Also drawings for churning machines and cheese pressers, double turnip sowing machines, and several ploughs, &c., used for West India purposes.

No. 28.—Mr. Hugh Carson, of Warminster, Wilts.—A swing plough, of wrought-iron, used with two horses abreast.

A plough, used as swing or one wheel, as may be required, and with two horses.

One wheel wrought iron plough, with two horses.

One wheel plough, wood beam and handles, with iron frame and turn furrow, two horses.

Two horse ploughs, with one wheel, wood and iron, for light soils.—For trial.

Scarifier, with an improved action of the lever, as at one movement it lifts or lowers the whole of the tines; it has three sets of tines for drilling, scarifying, and couching. This implement is much used in Wilts and Dorset, and is highly approved; it is used with two or more horses, according to the land. —For trial.

Turnip and manure drill, calculated to sow seed and manure, on the Scotch drilling system, thirteen and a half or twenty seven inches apart; it will sow bone dust or ashes from ten bushels to 100 bushels per acre; it deposits the seed after the manure is covered, on the top of the same ridge; it is drawn by one horse, with one man and boy to attend it.—For trial.

Horse hoe or double furrow plough, when used for a scuffler or horse hoe, for cleaning between the rows of turnips, beans, or potatoes, the turn furrows must be removed. It is also used by removing the coulter or cutter, and fixing the turn furrows, as a double furrow plough, for drilling turnips, or draining between the ridges of new sown wheat, earthing beans, potatoes, &c. It is drawn by one horse, with a man or boy to hold it.

Another, with wrought iron frame.—For trial.

Another, with wood and iron ditto.—For trial.

Chaff-cutting machines.—A large one-knife machine, on iron frame, with improved manner of feeding without a crank; will cut the chaff various lengths, as may be required. The alteration is effected by a very simple contrivance. Another, with one-knife ditto, on iron frame, with crank, and improved manner of feeding to cut various lengths, equally simple in the alteration as it regards the length of cut—To compete. A large two-knife machine, with iron frame; improved manner of feeding; fitted for horse power; will cut the chaff various lengths; it will cut twice the quantity of either of the above fitted with the same power.

A single cheese press, which, by means of a double-actional lever,—a 14lb. weight on the end of the lever, will give a pressure equal to 6½ cwt., and quite portable.

A double cheese press, of the same construction. —To compete.

A pair of double wrought iron harrows.

No. 29.—James Richmond, of Salford, near Manchester.—Hay-making machine. The merits of this machine consist in the simple, effective, and compact movement; the peculiar construction of which allows the wheels of the machine to be much larger, and revolving all on one centre, entirely prevents the liability of choking with grass.—The fans on the spike-rails are also of great assistance, which, from the rapid motion of the drum of the machine, throw the hay to a considerable height, and ensures a more equal distribution.—To compete.

Improved chaff machine.—The neat and compact construction of this machine, combined with the simple and durable movement, renders it very suitable for small farmers; and may be put into the most inexperienced hands, without the liability of getting out of repair. It will cut at the rate of four trusses of hay or straw per hour.—To compete.

Worth's patent chaff machine.—The peculiar construction of this machine causes a very great decrease of labour; it may be fed and turned by one man, and cuts four trusses of hay or straw per hour with ease. The durability is very great, as there is no friction in the cut. The knives are all separate, and are easily replaced, if injured by accident. The machine can be made to cut any length.—To compete.

Improved mills for crushing oats, beans, malt, &c. —The merits of these mills consist principally in the construction of the rollers, which are made of the best wrought iron, case-hardened; will stand recutting any number of times, and be as good as new,—an advantage which cannot be had in mills made with cast-iron rollers. The feed is regulated by a small fluted roller, which conveys the grain between the other rollers, and prevents the liability of choking. The smallest will crush a bushel in ten, and the largest a bushel in six minutes.—To compete.

Improved sheep turnip-cutter.—This machine is neat, durable, and portable; the merits of which consist, principally, in the horizontal cut, which reduces the friction, and makes the cut more regular. —To compete.

No. 30.—Mr. John Ferrabee, of Phœnix Iron Works, Stroud.—Threshing machine, in which the feed-rollers are dispensed with. The corn is presented to the drum at a tangent to the circle described by it. The quantity it will scutch out depends upon the power applied, and the yield of the crop. With two men at the handles, it has thrashed forty-two bushels of oats in six hours. It may be driven by horse-power.

Chaff machine.—This is a small machine, made entirely of metal, and adapted for gentlemen's stables. It will cut about twelve bushels of ¼-inch chaff per hour.

A chaff machine.—This is a large machine fitted with two knives, and may be easily regulated to cut the different lengths of ¼ inch, ½ inch, and ¾ inch. With two men, one to turn and one to feed the machine, it will cut at the rate of twenty to twenty-five bushels per hour, ¼ inch; fifty to sixty bushels per hour, ½ inch; sixty to seventy bushels per hour, ¾ inch. It is so constructed, that it may be driven by two or more men, or by horse power.

Three tine horse hoe, so constructed as to admit of any kind of points or hoes being used without removing the tines. The hoes are made of chilled cast iron, equally as durable as steel, which may be readily replaced in case of breakage. The implement may be adjusted to any width, from seven to twenty-seven inches, with great facility, and it always presents the edges of the hoes in the direction of the draught. It has no joints, consequently is not liable to become loose by wear.

Hay making machine.—Constructed so that one man can easily adjust it to any depth, or throw it out of gear when it has to travel. The rakes are so disposed on the barrel as to render the draught more equal. Can be worked easily with one horse, and, being constructed almost entirely of metal, is not liable to get out of repair.

A Budding's patent grass cutter.—This machine is for the purpose of cutting lawns or extensive pleasure grounds; it cuts a width of twenty-six inches, and when drawn by a small pony, will cut at the rate of an acre in an hour and a quarter, collecting the grass as it advances.

No. 31.—Mr. Charles Adams, of Moor House, Kilton, near Bridgwater, Somerset.—A subsoil plough, of his own invention. One horse can stir the soil six inches deep on free working land.—For trial.

A horse hoe, of his own invention.—For trial.

No. 32.—Mr. Charles Appleyard, of 9, Montague-street, London.— A machine for hatching game and chickens artificially. Invented by himself. Made by Cottam and Hallen.—For competition, as a new implement.

No. 33.—Mr. Edward Bowly, of Siddington-House, near Cirencester, Gloucestershire.—A subsoil plough, of his own invention.—For trial.

A scarifier, the invention of Mr. W. Saunders, of Sheltingford, Oxfordshire.—For trial.

No. 34.—Mr. John Cartmell, of Liverpool.—Two grain bruisers.—To compete.

Two chaff-cutting machines, of his own invention.—To compete.

No. 35.—Mr. John Churley, of Finughy, near Belfast, Ireland.—A Palestine plough, manufactured at Ramli, 24 miles from Jerusalem.

No. 36.—Mr. Edward Cockey, of Frome-Selwood, Somerset.—A chaff-cutter, of his own invention.—To compete.

No. 37.—Mr. James Comins, of South Molton, Devon.—A one-way plough, for ploughing hilly or plain land. This is of his own invention.—For trial as a new implement.

An open-furrow draining plough. It can be worked by four or six horses, as it is easily regulated so as to plough any depth. This is of his own invention.—For trial.

No. 38.—Mr. Joshua Cooch, of Harleston, near Northampton.—A machine for cleaning or winnowing corn and small seeds. Invented by the late Mr. John Cooch.—To compete.

No. 39.—Mr. Stephen Down, of Weston-super-Mare, Somerset.—A machine for washing and managing seed-wheat preparatory to its being sown or drilled and thereby preventing the smut in wheat, which is so generally complained of. This is of his own invention.—For competition as a new implement.

No. 40.—Mr. Richard Edwards, of Banbury, Oxon.—Patent land presser and drill.—The improvement in the land presser consists in placing the pressing wheels on levers, so as to meet the inequalities of the soil, and press the land equally. It may be used with or without the drill. By removing the pressers and substituting the shares, it acts well as a simple drill. The improvements in the drill consist in the plan of collecting the seed, and the simultaneous way of regulating the required quantity, and also that it will drill all sorts of grain without the least alteration. It can be made to any size required. N.B. A cup drill on an improved principle can be substituted, if preferred, and attached to the presser.—For competition as a new implement.

Improved turnip cutting machine.—Cuts two bushels per minute. The advantages of this machine consist in its being made with moveable knives, and cutting for beasts and sheep—for the former in various sizes; for the latter, three-quarters of an inch wide, and half an inch thick; also in its simplicity of construction, rendering it less liable to be impaired.—To compete.

No. 41.—Mr. Wm. Ford, of Richmond Wharf, Nine Elms, Battersea.—A machine. Its merits consist in the economy of labour in the manufacture of draining and other tiles and bricks; invented by Mr. William Irving, of Lambeth.—For competition as a new implement.

No. 42.—Mr. Thos. Fyfe, of 26, Tavistock-street, Covent Garden, London.—A horse rake of his own invention.—For trial.

A coulter for ploughs. Its merits consist in its being capable of being instantly adjusted to the greatest nicety, and at once fixed in the requisite position, without loss of time; invented by himself.—For competition as a new implement.

No. 43.—Mr. William James Gingell, of Bristol and Wrington, Somerset.—A cheese presser of his own invention.—To compete.

A cider ditto ditto.

No. 44.—Mr. W. Ground, of Whittesley, near Peterborough.—A machine for cleaning corn, invented by Mr. Cooch, with improvements by himself.—To compete.

A chaff machine.—To compete.

No. 45.—Mr. Wm. Groundsell, of Louth, Lincolnshire.—An implement for protecting vegetation from the fly and slugs; invented by himself.—For competition as a new implement.

Manure and turnip drills.—To compete.

Corn drill and drills for general purposes.—To compete.

A dressing machine, of his own invention.—To compete.

No. 46.—Mr. A. W. Gower, of Hook, near Hartfordbridge, Hampshire.—A corn and manure drill, partly his own invention.—For trial.

No. 47.—Mr. Joseph Cooke Grant, of Stamford, Lincolnshire.—A horse rake, of his own invention.—For trial.

A horse hoe, ditto. ditto.

A machine for harrowing barley, ditto.

No. 48.—Mr. Joseph Hall, of Fitzroy-street, Cambridge.—A scarifier of his own invention.—For trial.

No. 49.—Mr. H. J. Hannam, of Burcott, near Benson, Oxon.—A harvest cart, the merits of which consist in its being adapted for the single horse system; being constructed to carry an ordinary waggon load with the draught of one horse; invented by himself.—For competition as a new implement.

No. 50.—Mr. Thomas Johnson, of Leicester.—A turf and stubble plough.—This implement is adapted to pare old or new pasture land or stubbles, which may be intended for burning. Its merits consist in executing the work with greater precision, expedition, and economy, than by the floating or breast spade. The turf is cut off, the uniform width of about fourteen inches, and the thickness may be varied according to the ground, or the will of the holder, while the plough is working, from half an inch to two inches, which is laid up in a curl, the grass side inwards. With three horses and a driver, this implement will do two acres in eight or nine hours, while if done by the old plan, a strong man would not complete more than three roods, or an acre in six days, at a cost of from sixteen to twenty shillings. It is as well calculated to work on clover ley, or stubble ground, as on old turf, and will do an equal quantity in the same time, and it is not difficult to manage; any man with a little practice would be able to conduct it on land of a tolerably even surface.—For sale by auction.

No. 51.—Mr. Samuel Jonas, of Ickleton, near Saffron Walden, Cambridge.—A drill for general purposes, and for turnips and manure, with an apparatus attached for the purpose of acting as a drop drill. The drill is the invention of Mr. Smyth, of Peasenhall. The apparatus for converting it into a drop drill invented by Mr. Samuel Jonas, as above. The advantage this drop drill possesses over the drop drills hitherto invented is, that the apparatus for dropping can be applied to any manure and corn drill, for about one-sixth the expense of drop drills; and its depositing the bones and seed separately.—For trial.

No. 52.—Mr. Thomas Teago, of Peasenhall, near Yoxford, Suffolk.—A drill with eleven shares for all kinds of manure, corn, and seeds, of his own invention.—For trial.

A drill, with seven shares, &c., of his own invention.—For trial.

No. 53.—Mr. William Irving, of Regent-street, Lambeth, Surrey.—A drop drill for sowing corn and other grain, of his own invention.—For trial.

No. 54.—Mr. S. John Knight, of Maidstone, Kent.—Hand-thrashing machine, the invention of Mr. Joseph Barling, of Maidstone.—To compete.

No. 55.—Mr. James Lovell, of Glastonbury, Somerset.—A hay-making machine, of his own invention.—For trial.

No. 56.—Mr. Richard Marrett, of Appleadon, Newent, Gloucestershire.—A horse hoe, of his own invention.—For trial.

A two-horse swing plough, of his own invention.—For trial.

No. 57.—Mr. Emd. Moody, of Maiden Bradley, near Mere.—A root crusher, of his own invention. The above machine only requires the attention of a boy, and with the power of a small pony, will crush sixty bushels an hour,—reducing the roots to a pulp, which, mixed with a proportion of chaff, is eagerly devoured both by sheep and cattle, improving their condition, and preventing all waste. A machine on the same principle, but worked by hand, requires but one ordinary man, and will crush fifteen bushels an hour, and could be well applied for grinding apples.—To compete.

No. 58.—Mr. John Morton, of Boston, Lincolnshire.—A corn reaping machine, invented by himself.—To compete.

No. 59.—Mr. James W. Newbury, of Hook Norton, Chipping Norton, Oxford.—A machine, the merits of which consist in putting a certain quantity of seed into holes at regular distances; invented by himself and G. Saunders, of Hook Norton.—For competition as a new implement.

No. 60.—The Hon. M. W. B. Nugent, of Higham Grange, near Hinckley, Leicestershire.—A subpulverizing plough, of his own invention, with improvements by Mr. Wilkie, of Addington, near Glasgow, N.B.—For trial.

No. 61,—Mr. W. Ogborne, of Shirehampton, near Bristol.—An improved turnip hoe. Its merits are its durability and small amount of cost, not being more than one shilling, and which will last for many years. May be set for one half-penny.—For competition as a new implement.

Also a lotion, for the destruction of maggots in sheep, without cutting away the wool. If there should be wounds of ever so great a magnitude, it will subdue the inflammation, and give them a disposition to heal. It also destroys all fly-blowing and maggots whatsoever in lambs, &c.

No. 62.—Mr. Zachariah Parkes, of Birmingham. —A domestic flour mill. Its merits are its simplicity of construction; being without any cog-wheels or complicated movements, consequently not liable to get out of order. Portability; being easily removed, taking up little room, the base occupying only twenty-six inches square. Durability; from being made of steel, instead of cast iron (the material used in most other mills), it endures longer, and the teeth can be re-sharpened when required. Expedition and ease in working; an adult grinding and dressing easily, at one operation, a bag of wheat per day. N.B. The whole operation being enclosed, no inconvenience can arise from any portion of the flour escaping.—For competition as a new implement.

No. 63.—Mr. Walter Palmer, of Pencoyd, near Ross.—A scarifier, with surface ploughs, partly invented by himself. One pair of horses can work it, both as a surface plough and scarifier together, or a surface plough, or a scarifier, separately, for the purpose of deeply stirring, and giving tilth to clean land, or for cleansing that which is otherwise.—For trial.

No. 64.—Messrs. Charles and W. Philips and Co., of Chipping-Norton, Oxfordshire.—A machine of cutting turnips, mangel wurzel, &c., for all kinds of cattle; and in doing so, it makes an exceedingly small quantity of those small chippings, which are considerable in quantity in the most perfect machines yet in use, and which are nearly all waste. It does not leave unslit the least slice of each turnip, as is the case with most other machines, and from which results a great deal of waste; and the arrangement of the knives allows of their immediate adjustment to cut the slips of turnips of sizes to suit all kinds of cattle. Invented by themselves.—For competition as a new implement.

A turnip cutter, the invention of Charles Phillips, of Chipping-Norton.—To compete.

No. 65.—Mr. E. Plenty, of Newbury, Berks.—A thrashing machine. Its merits consist in the horse power being wholly of iron, and the ease and simplicity with which it is put to work as a portable machine.—For competition as a new implement.

No. 66.—Mr. Pusey, M.P., of Pusey, near Faringdon, Berks.—A subsoil plough, of his own invention.—For trial.

No. 67.—The Rev. W. L. Rham, of Winkfield, Bracknell, Berks.—A machine for dibbling seeds accurately and regularly. The above is of his own invention.—For competition as a new implement.

No. 68.—Mr. Forehead Singer, of Berkeley, Frome, Somerset.—A machine for dusting young turnips, to prevent the fly from destroying them; also, attached, a simple but durable turnip drill. —To compete as a new implement, and for trial.

No. 69.—Mr. James Smith, of 24, Southgate-street, Gloucester.—A turnip cutter, of his own invention.—No. 4 is an improved machine, which will adjust and vary to the following lengths of cut:—$\frac{1}{4}$ inch, $\frac{1}{2}$ inch, $\frac{3}{4}$ inch, 1 inch and 12 inch, at $\frac{1}{4}$ inch; it will cut from 30 to 40 bushels of fodder per hour; $\frac{1}{2}$ ditto, 50 to 60 ditto; $\frac{3}{4}$ ditto, 80 to 90 ditto; 12 ditto, 100 to 150 ditto. This machine only requires two men to work it.

A cheese presser, three feet square.—To compete, and for sale by auction.

No. 70.—Mr. James Smyth, of Peasenhall, near Yoxford, Suffolk.—A turnip seed and manure drill on the sliding principle, of his own invention, on a simple principle, for any width between the rows.

A drill for corn and general purposes.

A drill for turnip and manure ridge, or broad work, upon the simplest method ever exhibited, for various widths.—The above are of his own invention.—For trial.

No. 71.—Mr. James Sweetman, of Bristol.—A chaff cutter, improved by himself.—To compete.

No. 72.—Mr. John Stokes, of Pauntly-court, Newent, Gloucestershire.—A double furrow plough, invented by Mr. J. Mason, of Grafton, Warwickshire.—For trial, and for sale by auction.

A wheel plough, invented by Mr. J. Mason, of Grafton, Warwickshire.—For trial, and for sale by auction.

No. 73.—Mr. Thomas Thatcher, of Kilmersdon near Frome, Somerset.—A cart, with self-acting dray.—For competition as a new implement.

No. 74.—Mr. C. C. Waller, of Great Dover-street, Borough, London.—A dibbling machine.—The merits of which consist in the manner in which it drops the seed sown by it, and also the accuracy with which the quantity so deposited is regulated. It is applicable for many descriptions of lands.—For competition as a new implement.

No. 75.—Mr. John White, of Burton-on-Wold, near Loughborough, Leicestershire.—A horse hoe, of his own invention.—For trial.

No. 76.—Mr. Wm. Pendock, of Dibden-farm, Mangotsfield, near Bristol.—A scarifier of his own invention.—The following are its chief advantages: 1. The improved alteration of the tine, the front of which stands six inches clear of the frame, so that the couch which collects before may meet with no obstruction; and if not passing on either side, will be at liberty to fall over the top. 2. Is that of an additional hand-bar being fixed on both sides of the axle, so that the weight of the frame and tines, when in the land, may bear equally on both wheels, thereby preventing one wheel sinking lower into the earth, and allowing one side of the scarifier to work an inch deeper than the other, and by that means throwing the scarifier on a twist, straining the machinery, and, in some instances, breaking the tines.—For trial.

No. 77.—Mr. John Wright, of Glastonbury, Somersetshire—A double and single cheese press, of his own invention.—To compete.

No. 78.—Messrs. Thomas Gibbs and Co., of the corner of Half Moon Street, Piccadilly, London, the seedsmen to the Honourable Boards of Agriculture of England and Sweden.—Not competing.

Samples of the most approved selected natural grass seeds, for laying down land to permanent grass, such as the dactylis glomerata, festuca pratensis, phleum pratensis, poa pratensis, poa trivialis, festuca durinscula, alopecurus pratensis, holcus avenaceus, agrostis stolonifera, avena flavescens, poa nemoralis, lolium dristatum, cynosurus cristatus, festuca glabra, festuca ovina (var.), anthoxanthum odoratum, achillea millefolium, medicago lupulium, trifolium medium, trifolium repens, trifolium fileformis, vicia sepium, &c.

Gibbs's purple-top Swedish turnip.

Gibbs's green-top Swedish turnip.

Thorpland green-top Swedish turnip.

Gibbs's green-top yellow hybrid turnip.

Gibbs's red top yellow hybrid turnip.

Large green globe turnip.

Large white globe turnip.

Early stubble.

White tankard turnip, green tankard ditto, mangel wurzel, rohl rabi, or Hungarian turnip.

Horse beans, early mazagan beans, longpods, hangdown, &c.

Early white field peas, blue Prussians, imperial knights, new green dwarf, wrinkle marrows, tall-imperial peas, Waterloo peas, semitar peas, and other varieties.

Large white Belgium cattle carrot, large field Altingham carrot, &c.

Chicory, lucerne, burnett, red clover, white clover, spurry, millet, Bokhara clover, new cattle endive.

Bunias, trifolium incarnatum.

Wheats, barley, and oats, of several varieties, in the grain and ear; also dried specimens of grasses, as dactylis glomerata, festuca duriuscula, festuca pratensis, cynosurus cristatus, anthoxanthum odoratum, poa trivialis, poa pratensis, poa nemoralis, holcus avenaceus, avena flavescens, agrostis stolonifera, alopecurus pratensis, festuca sylvatica, festuca glabra, festucaovina, poa cerulea, poa pratensis proecox, bromus arvensis, bromus pinnotus, bromus inermis, festuca elatior, brixa media, hordeum pratensis, lolium Italicum, lolium perenne (var.), trifolium fileformis, and other varieties.

No. 79.—Mr. John Clover, of Kirtling, near Newmarket.—Fourteen bushels, Clover's red wheat.

No. 80.—Mr. James Davis, of Yatton, near Bristol.—Fourteen bushels, "Glory of the West red wheat."

No. 81.—Mr. Wm. J. Henry Prickman, of Credislow, Devon.—Fourteen bushels of Old Lammas wheat.

No. 82.—Mr. Wm. Woodward, of Bredon's Nerton, near Tewkesbury. — Fourteen bushels, creeping red wheat.

No. 83.—Mr. Ed. Churche, of Biddisham, Axbridge, Somerset.—Sample of Somersetshire cheese. —For sale by auction.

No. 84.—Mr. Ed. Jones, of Kingston Seymour, Somerset.—Sample of best thick table cheese.

No. 85.—Mr. John Leonard, of Water End, near Dursley, Gloucestershire.—Sample of thin Gloucester cheese.

No. 86.—Mr. J. B. Mullins, of Wyke Champflower, near Bruton, Somerset.—Sample of Cheddar cheese.

No. 87.—Mr. John Talbot, of Bolton-borough, near Glastonbury, Somerset. — Sample of white Somersetshire cheese.

No. 88.—Mr. Thos. Taylor, jun., of Hatton, near Warrington. — Sample of Cheshire cheese.— For sale by auction.

No. 89.— Mr. Ed. Fry Vowles, of Wellington, near Axbridge, Somersetshire.—Sample of Somersetshire cheese.

No. 90.—Mr. W. H. Williams, of Codrington, near Chipping Sodbury, Gloucestershire.—Sample of thin toasting cheese.

No. 91.—Mr. W. Norris, of West Pennard, near Glastonbury.—Sample of cheese.

No. 92.—Mr. E. J. Lance, of Frimley, near Bagshot.—A collection of agricultural soils, arranged geologically from London to Cornwall and to the North of Scotland, with specimens of various extraneous manures in use for giving energy to soils.

Specimens of alpaca wool, with fabrics of the same.

Agricultural works, written by himself.—"The Hop Farmer," "The Cottage Farmer," "Essay on the Food of Plants," and "Turnip Culture;" specimens of agricultural produce, the effects of "Humus Manure," with Bagshot sands.

A drilling machine.—Its merits consist in its being a hand-drilling instrument, for one seam at a time, to be worked on the ridge or on the flat, by man or horse, in a light and well-tilled ground; it will draw a drill and deposit any granulated humus or bone manure, with turnip seed, or any grain, falling together into the drill so made. When the machine is not wanted for drawing a drill for depositing manure or seed (either of which it will do singly), the boxes may be removed, also the drill-iron and either hoe fixed in the front of one inch or four inches wide; it then becomes a hoe, to be drawn by a man, between any narrow cropping, or with a light horse to break the ground, and cut up weeds with the four-inch cutter. Price, complete, 3*l*. This is of his own invention.—For competition as a new implement.

No. 93.—Mr. Henry Cormack, of 106, Deansgate, Manchester.—Agricultural seeds.—Specimens of grasses, new Egyptian vetch dried, and in a growing state, roots, &c. Sir James Murray's new patent fertilizers or manures, viz., patent portable guano, for potatoes, clover, and all culinary crops. No. 2, patent liquid guano, for wheat, oats, barley, rye, and flax. No. 3, patent liquid guano, for grass meadows, lawns, and gardens.

No. 94.—Mr. George Gibbs, of 26, Down Street, Piccadilly, Middlesex.—Several varieties of British and other grasses in seeds and dried specimens.

Varieties of wheats in grain and ears.

Varieties of barleys in grain and ears.

Varieties of oats in grain and ears.

Varieties of tares in grain and ears.

Lentils.

Turnip seeds, &c.

Roots of turnips, mangel wurzel, carrots, &c., if ready.

No. 95.—Mr. Robert Stocker, of Long Ashton, near Bristol.—Mangel wurzel roots, red globe, orange globe; Swede turnips, Skirving's purple top.

No. 96.—Mr. Cardogan Williams, Bridge End, Cardiff.—Model of a roller, on a new principle.

Models of two implements for hacking land.

Models for thrashing machines.

Models for grubbing bushes.

Potatoes in a state of preservation.

A model to show the principle of a new chaff cutter.

A model to show how thrashed straw might be stored.

No. 97.—Mr. T. L. Smith, of 3, Upper Wells-street, Bristol.—A new horse-shoe, defending the sole of the foot against any hard or sharp bodies which the horse may chance to tread on, and superseding the use of any instrument for picking the feet.

No. 98.—Mr. W. H. Higman, of Bristol.—An improved saddle with moveable pannels, well calculated to give ease both to horse and rider, particularly for hunting or military purposes.

Improved Haimes for harness of every description, with a moveable draft tug. The point of draft may be suited to the size of the horse, or inclination of the shoulder; great relief is afforded on bad roads, particularly with tender shoulders.

Improved bits for the road, hunting, or driving.—By the use of which horses with bad mouths may soon be improved; it keeps a horse's mouth cool and moist; whilst this is obtained he will never bore and pull at the rider.

No. 99.—Mr. J. Read, of Regent Circus, Piccadilly, London.—A medicated vapour inhaler, for colds, coughs, inflammation, &c., &c., of the respiratory organs of that most valuable animal, the horse. Also, to be introduced into the bladder, which may be injected or ejected with warm water by the instrument.

New steam vapour bath.—Made of thin boards, lined with air-proof cloth. By means of the improved stove, six quarts of water may be made to boil in fifteen minutes, and the vapour raised to 140 degrees of Fahrenheit in twenty-four minutes, and will remain at the same temperature for two hours without additional fuel, supplying at the same time a medicated vapour to the nostrils for the relief of colds, inflammation, &c., of the respiratory organs.

The stomach pump and clyster apparatus.—For removing obstructions of the bowels, gripes, &c., by the addition of an œsophagus tube, the stomach may be relieved of wind colic, or the expansion of gas, caused by eating wheat or any fermenting food. This instrument is well worthy the attention of every nobleman, sportsman, and every person (interested in the breed and rearing of cattle) in the kingdom.

Improved hollow probang, for relieving choked or hoven bullocks or sheep, which frequently happens from eating greedily of turnips, potatoes, &c. This instrument is mounted with an egg-shaped bulb of a proper size to pass freely down the œsophagus of a bullock, and if the substance cannot be easily passed into the stomach, the stillet, mounted with a screw, may be bored into the turnip, by means of which it may be easily and safely withdrawn. For relieving hoven bullocks that have eaten greedily of turnip-tops, clover, or any other green esculent food, the probang should be passed with the stillet in it, and be moved up and down a few times, and the gas will escape through the small holes of the bulb, then withdraw the stillet, and move it as before, and it will give immediate relief. These instruments have been lately much improved, and have saved the lives of many valuable animals, that must otherwise have perished.

Hydraulic machine.—It is a pump in miniature, and may be placed in a water pot or any other vessel.

Another machine, which is of larger dimensions, containing about fourteen gallons of water, supported on four small wheels. The pump is surrounded by an air vessel, by means of which a constant stream is kept up equal in effect to a double action pump. Regular garden engine, will discharge water in a dense stream to a distance of fifty feet, and may be worked by one man with ease; it is applicable to all horticultural purposes, particularly for cleansing wall and standard trees from those destructive insects which are so injurious to the young shoots of fruit trees, particularly of the peach and nectarine, which produce their fruit solely from the last year's wood.

Local fire engine.—Is well adapted for agricultural buildings in cases of accidental or incendiary fires; likewise for mansions, factories, villages, &c. It will discharge water in a powerful stream (at the rate of twenty gallons per minute) to a distance of sixty feet. The valves, being solid metal, can never get out of repair; if standing by for months, would be ready to act in an instant. The above is the most portable and powerful fire engine ever produced; it will pass any doorway three feet wide, and may be kept in a hall, or staircase; and by shifting the fulcrum pin, may be worked by one man, and is the best adapted for all horticultural purposes, which the patentee, from thirty-one years' experience in the above science in all its branches, can safely warrant.

Also an oval copper vessel, containing twenty-six gallons, particularly adapted for large conservatories and forcing houses of all descriptions; it will pass through a doorway two feet wide, its power is equal to any barrow engine, and is admirably well adapted for a local fire engine; it is so portable, it can be carried up or down stairs by two men, and kept in a hall, staircase, or even in a bed-room; the valves being solid metal, it cannot get out of repair, and is ready to act in an instant.

Patent safety driving and riding reins.—The driving reins being adapted for hard or tender-mouthed horses, and can be used with the usual kind of bit; they are intended to drive from the check loop or easy part of the bit, and being made elastic, give ease to the horse's mouth and to the hand of the driver. They are constructed so as to be a complete safety rein, having an additional pair which is attached to the lower loop of the bit, and in case of need is brought into immediate use with one hand part, giving increased command over the animal, and combining all the securities of an extra pair of reins. The riding reins will be found for ladies' bridles to possess great advantages over those in general use; the elastic part being attached to the bradroon, and the other to the curb bit with only one hand part, thereby avoiding the unpleasantness of having two reins in hand.

Extra prize plough, exhibited by Mr. John Stokes, Pountley Court, Newent, Gloucestershire.—The utility of this plough consists in its lightness of draught, and the neatness and efficiency of the work performed; it is well adapted to any soil, and with the slicers attached will be found particularly useful for breaking up old pastures, strong soils, or land that requires harrowing and bringing to a fine tilth, without the common practice of kneading the surface with the horses' feet. The wheels regulating the depth and width of furrow, the most unskilful ploughman would be capable of its management.

TRIAL OF IMPLEMENTS.

The trial of implements took place in a field near Sneed Park, in the presence of Messrs. Parkes, Graburn, and Legard the judges, and Messrs. George Webb Hall, W. F. Hobbs, and Wm. Shaw, stewards of the ground. It commenced about half-past five o'clock in the morning, and occupied the whole of the day, trials being made of new inventions in almost every description of agricultural machines, several of which were pronounced by the judges to contain useful improvements, while others were declared to be failures.

Notwithstanding the unfavourable state of the weather, the interesting nature of the exhibition attracted a large number of spectators, among whom were several influential gentlemen of the neighbourhood, including W. Miles, Esq., T. Kington, Esq., Sir T. D. Acland, &c., and many gentlemen farmers from the surrounding counties of Hereford, Monmouth, Glamorgan, Devon, Wilts, &c.

There were a great many instruments on the ground, consisting principally of ploughs, of various construction, turnip-cutting and dibbling-machines, and a patent circular clod-cutting instrument. A plough, invented by Mr. Mason, of Grafton, Warwickshire, which, having two arms attached to the share for scattering the soil, did the work of the barrow at the same time, attracted much attention. It was so easy of management that the gentleman who explained its advantages, Mr. Stokes, of Newent, Gloucestershire, would frequently hold by one handle for more than a hundred yards. Its lightness of draught, too, and the neatness and efficiency with which it performed its work, were generally admired: it is said, also, to be adapted to any soil, and, with the slicers attached, particularly useful for breaking up old pastures, strong soils, or land which requires harrowing and bringing up to a fine tilth, without the common practice of kneading the surface with the horses' feet. A subsoil plough, the invention of P. Pusey, Esq., was also pronounced to contain some decided improvements. A machine for superseding digging, the invention of Lady Vavasour, was tried, but proved a complete failure. A plough invented by Mr. T. Huckvale, Over Norton, Oxford, was generally admired for its novel and simple construction. The share of this instrument being made to shift, a furrow could be taken right or left—this the company considered a great advantage, enabling the ploughman to execute his work without losing a foot of ground. There were also Mason's improved Warwickshire one-wheel plough, with double shares, adapted for light soils; a patent conical wheel plough, with tension share and coulter; and a one-wheel Scotch plough, considered by practical farmers a very effective instrument. The Winkfield patent dibbling machine, invented by the Rev. W. L. Rham, was an object of great attraction; it was stated to be capable of dibbling two, three, or four rows at various distances, from 8 to 27 inches apart, to deposit the seed and manure, and cover and roll the same at one operation, and complete four acres a-day. Most of the newly-invented ploughs were tried with Cottam's dynamometer for trying the ease of the draught, and the number of implements submitted for trial was much larger than on any previous occasion. Had the weather been more favourable, these trials would have been, from their great interest, attended by a large number of practical agriculturists; but unfortunately the very heavy rain, which continued to descend for hours successively, tended both to limit the pleasure and the range of operations.

PRIZES FOR IMPLEMENTS.

Judges.—Josiah Parkes, civil engineer, of London; George Legard, of Pocklington; R. S. Graburn, of Branswell-cottage.

To the Hon. Mr. Nugent, for his subsoil plough	£15
To Mr. Howard, of Bedford, wheel plough	5
To the Earl of Ducie, swing plough	5
To Mr. Hornsby, of Grantham, drill for corn and general purposes	30
To Messrs. Garratt, of Leiston Works, turnip and manure drill	20
To Ditto ditto horse hoe	10
To Ditto ditto cake crusher.	5
To Messrs. Saunders and Co., of Bedford, turnip cutter	5
To Mr. Gingell, Bristol, cheese presser	5
To Mr. Lovell, Glastonbury, haymaking machine	10
To Mr. Grant, Stamford, horse rake	5
To Mr. ap David, Cardiff, harrow	5
To Mr. Law, Glasgow, trenching and subsoil plough	5
To Mr. Mason, Grafton, two-wheeled plough, with knives attached for pulverizing the furrow slice	10
To Mr. Grounsel, Louth, an improved mode of distributing manure and soot by drilling machine	5
To Mr. Plenty, horse work for thrashing machines	5
To Messrs. Cottam and Hallen, a light grubber	5
To Ditt dynomometer	3
To Mr. Law, Glasgow, cart with an improved catch	3
To ditto ditto expanding horse hoe	3
To Messrs. Thatcher, cart with self-acting braker.	5
To Mr. Huckvale, liquid manure depositor	3
To Messrs. Ransome, Ipswich, an application of locomotive steam power to agricultural purposes	30
To Mr. Cambridge, Market Lavington, Wilts, do.	15
To Messrs. Wildey and Co., London, cocoa-nut fibre sheep-netting	3
To Messrs. Proctor, Bristol, turnip and chaff cutter combined	3
To Mr. Crosskill, Beverley, potato steamer	2
To Ditto ditto grass cultivator	5
To Ditto ditto soot and lime depositor	3

To Mr. Barling, Maidstone, an improved mode of working a hand thrashing machine............	£5
To Mr. Barrett, Appledean, Dutch horse hoe with harrow attached	2
To Mr. Richmond, Salford, Worth's chaff cutter. .	3
To Mr. Dean, Birmingham, corn grinding and dressing mill	5
To Mr. Stratton, Bristol, cross-lock waggon and general exhibition of carts and waggons	10

SEED-WHEAT.

Judges. — Geo. Kimberley, of Trotsworth; John Bright, of Teddesley-park farm; Thomas La Coste, of Chertsey.

The following are the three best samples of seed, selected for trial under the direction of the society: —

Mr. W. H. Brickman, Crediton, "Old Lammas" white wheat; Mr. William Woodward, Bredon's Norton, Tewkesbury, the "Creeping Red" wheat; Mr. James Davis, Yatton, near Bristol, the "Glory of the West" red wheat.

CHEESE.

Judges.—John Kinder, of Sandridgebury; Stephen Grantham, of Stoneham; Rev. J. R. Smythies, of Lynch-court.

To Mr. John Talbot, Baltonsborough, near Glastonbury, for white Somersetshire cheese	£10
To Mr. Edwd. Church, Biddisham, Axbridge, for Somersetshire cheese	5

THE PLOUGHING MATCH.

The public exhibition of ploughing in competition for the several premiums offered, took place on Wednesday, in a field in the occupation of Philip John Miles, Esq., of Leigh Court, and situated near Beggar's Bush, on the high road to Pill and Portshead.

The weather was, on the whole, less favourable than could have been desired; but the interesting nature of the operation, and its importance as a branch of the agricultural art, attracted a very large concourse of spectators, including a large proportion of practical farmers. The hour named for the commencement of the match was twelve o'clock; but for upwards of two hours before that period the roads in the immediate neighbourhood of the field were thronged by persons from Bristol, as well as from St. George's, Abbotts Leigh, and the surrounding villages, who were anxious to get a view of the proceedings.

The field contained about 20 acres, but it was not considered a very favourable spot, as it turned up stony, and in some instances would hardly admit of ploughing to the requisite depth of four inches.

On the ground were a vast number of fashionable equipages, upwards of 1,000 gentlemen on horseback, and from 4,000 to 5,000 foot spectators. His Royal Highness the Duke of Cambridge was in a carriage with the lady of P. J. Miles, Esq., of Leigh Court, where his royal highness was staying. He watched the proceedings, in which he appeared to take great interest, for several hours. His Grace the Duke of Richmond, the Duke of Beaufort, the Marquis of Worcester, the Marquis of Downshire, and other distinguished personages, were also on the ground.

Forty-six ploughs started, and the work was, as far as circumstances would admit of, cleverly performed.

The roads in the neighbourhood of the field presented all the appearance of a fair or race-course. At about half past 12 a smart shower came on, and much amusement was occasioned by the flight of the lookers-on, who scoured off in all directions from the field of action.

The Judges, Messrs. W. and J. Arnold, of Glostershire, and S. Druce, of Ensham, Oxfordshire, awarded the Prizes as follows:—

Pair of horses abreast, without a driver.

1st prize, 7*l.*, was adjudged to W. Shore, of West Lavington.

2nd ditto, 5*l.*, to Samuel Cook, of Tarlton.

3rd ditto, 3*l.*, to Jacob Smith, of Chippenham.

4th ditto, 2*l.*, to James Harding, of Hambrook.

With three horses and a driver.

1st prize, 5*l.*, to Thomas Wells, Newent plough (drawn by three mules).

No competition for the other prizes.

To lads under 18 years of age.

1st prize, 5*l.*, to J. Hazel, Chew Magna.

2nd ditto, 4*l.*, to J. Wheeler, East Colston.

No competition for the other prizes.

Farmers' Sons not in business for themselves.

The prize of 10*l.* for farmers' sons not in business for themselves, was awarded to John Anstey, of Wickwick, Gloucester.

His Royal Highness the Duke of Cambridge, remained on the ground until the Judges had made their award, and presented the prizes to the successful candidates in the most kind and condescending manner. Upon the suggestion of His Grace the Duke of Richmond, four of the unsuccessful candidates who were highly commended by the judges, had 10s. each awarded them; and the others 5s. each.

THE COUNCIL DINNER.

The council dinner took place in the large hall of the Victoria Rooms, at Clifton. This building, designed from the classic remains of the Corinthian order of architecture, is a very noble structure, with an extremely fine and spacious portico, and was on the present occasion for the first time occupied. The hall is 117 feet long by 54 feet wide, and in height 47 feet. About 600 gentlemen sat down to dinner.

The Chairman's seat was, on this occasion, occupied by Henry Handley, Esq., the President of the Society, having on his right his Royal Highness the Duke of Cambridge, his Grace the Duke of Beaufort, Earl Spencer, the Right Worshipful the Mayor, G. W. Franklyn, Esq., Baron Knesebeck, the High Sheriff, Thomas Jones, Esq., and the Town Clerk, D. Burges, Esq.: and on his left his Grace the Duke of Richmond, the Hon. Edward Everett, Envoy from the United States, the Marquis of Downshire, Earl Somers, Earl Chichester, Francis Savage, Esq., Master of the Society of Merchants, R. Phippen, Esq., L. McAdam, Esq., &c., &c. Mr. Pusey, M.P., occupied the Vice-Chair.

It is impossible to furnish a list of the company, but we noticed at the other table the Earl of Zetland, Earl Ducie, Lord Portman, Sir John Johnston, Sir Alexander Hood, Bart., Sir Thomas Acland, Bart., the Hon. Grantley Berkeley, Wm. Codrington, Esq., M. P., Robert Blagdon Hale, Esq., M.P., Wm. Miles, Esq., M.P., F. H. Dickinson, Esq., M.P., Walter Long, Esq., M.P., Joseph Neeld, Esq., M. P., R. C. Tudway, Esq., High Sheriff of the county of Somerset, W. F. Knatchbull, Esq., &c., &c.

Upon the removal of the cloth,

The Chairman said the first toast he had the honour to propose was, "The health of her Most Gracious Majesty the Queen," whom he prayed God might long preserve to us, and send a prosperous and happy reign.

The toast was drunk with enthusiasm and prolonged cheering.

The Chairman said the next toast he had

to propose was that of the "Healths of Her Majesty the Queen Dowager, his Royal Highness Prince Albert, Albert Prince of Wales, his Royal Highness the Duke of Cambridge, and the rest of the Royal Family. He knew how unnecesary it was to preface this toast with any remarks to ensure for it the most cordial and enthusiastic reception, but being on the present occasion honored by the presence of an illustrious member of that family, to which they were all bound by the strongest ties of devoted loyalty, he might perhaps be permitted to make one remark. His Royal Highness the Duke of Cambridge, who had honored them with his presence that day, had, from the earliest period of the formation of the Agricultural Society, honoured it with his support *(cheers)*. He was one of the Governors of the Society, had constantly attended the meetings in London, and on every occasion expressed that anxiety for their success which he (the chairman) was certain his royal highness wished them with the utmost sincerity. He called on them, therefore, to drink, in the way it merited, the toast he had proposed to them.

The toast having been responded to in an enthusiastic manner,

The Duke of CAMBRIDGE said that in rising to return them his most sincere thanks for the honor they had done him in drinking his health, he could assure them he felt not only highly gratified, but it was most satisfactory to him that he had the honour of attending a meeting at which he saw so numerous a company of country gentlemen assembled. Though not himself a practical farmer, no one was more anxious to see agriculture thrive than the individual who now had the honour to address them *(loud cheers)*. It certainly must be a matter of proud gratification to every Englishman, to every individual of property in the country, to see how agriculture was improving; and also to see what he looked upon as of equal if not greater importance, that the tenants were themselves convinced of the good their landlords were effecting through the medium of this Society. And in this point of view it was that he felt most anxious for the welfare and continued prosperity of the Royal Agricultural Society of England, which he hoped would every year thrive more and more *(cheers)*. Again he begged leave to return them all his best thanks *(cheers)*.

The CHAIRMAN had the pleasure of proposing "The Bishop and Clergy of the Diocese," coupling with the toast the name of the very rev. the dean, whom he saw at the same table with him.

The Dean, Dr. LAMB, begged leave to return the chairman his sincere thanks for the kind way in which he had proposed the healths of the clergy, and to the company assembled for the manner in which they had received it. He was sure he spoke only the feelings of the clergy when he said they were most anxious to support a society the object of which was to promote the prosperity of agriculture, for they must feel convinced that in doing so they were benefiting the interests of all classes of the community. If an individual by means of machinery, or a better cultivation of the soil, could bring two acres of land into production where formerly he could raise but one—or if he could now produce his fat bullock in two years instead of, as heretofore, in four, he conferred a benefit on all classes of the community. But there was a more important object achieved by this society than even improving the cultivation of the soil, or bettering the breed of cattle, and that had been the means of improving the farmer himself. It had brought him to apply himself to the scientific culture of his land, and had thus afforded him exercise for his intelligence and practical knowledge. Let the farmer be brought to exercise his mind, and he would be certain to improve.

The CHAIRMAN said they would ill discharge the debt of gratitude they owed to the constituted authorities of Bristol for the kind reception the society had met with from them, as well as for all the exertions they had made to render what was essential ready to the hands of the society, if they did not take this opportunity of drinking "The healths of the Mayor, the High Sheriff, and Corporation of the City of Bristol," with the best thanks of the Society for their hospitality and kind reception. *(Loud cheers.)*

The MAYOR, in returning thanks, said he felt that a heavy task was imposed upon him. He was sure he spoke the language of truth, when he said that the society had conferred a great honour, not only on the Mayor of Bristol, the High Sheriff, and the Corporation, but, he really thought, it had conferred a great and lasting honour on the citizens of Bristol at large. He felt, when he looked around him, and saw an illustrious prince of the house of Brunswick—those noble and distinguished peers who were an honour to their country—and the many eminent commoners of the land associated together, he must say he felt it was a proud moment, not only for the humble individual who had the honour of filling the office of chief magistrate, but for the entire body of citizens. It would be out of place for him to say one word on the subject of the benefits which the society conferred on the kingdom at large, but he might perhaps be permitted to say that it had conferred and would confer great benefits on the city of Bristol. Its noble and distinguished members had mingled with the citizens in a spirit of kind and friendly condescension; and, although he did not know what the cycle of the operations of the society was, or its intended movements, he yet trusted he might venture to express his ardent hope that it would again honour Bristol with its presence *(much cheering)*—and he was sure his fellow citizens would join him in the wish he had expressed *(Cheers.)*

The CHAIRMAN said he did not know how far their meeting was honoured by the attendance of distinguished foreigners, as, in consequence of his numerous engagements, he had no opportunity of being made known to them; but he knew there was one present — the minister of the United States. *(Loud cheers.)* He perceived that they received him with the feelings of a relative and a friend. *(Cheers.)* It was not, however, in his (the minister's) official capacity that he now presented him to their notice. On the following day he should have the pleasure of doing so before the assembled farmers of England; but to-day, under the peculiar character of the meeting, it was his privilege to hail him as one of themselves, as an honorary member of the Royal Agricultural Society of England, to which he had been unanimously elected. *(Cheers.)* He was here what he was at home—their brother farmer, pursuing the same objects, and contributing in his own sphere to the promotion of the same result. He gave them "The health of the Hon. Edward Everett, Honorary Member of the Royal Agricultural Society. *(Long-continued cheering.)*

Mr. EVERETT was loudly cheered on rising to address the meeting. He returned them, he said, his heartfelt acknowledgments for the kind and unexpected honour they had been pleased to confer on him. He had come there with no other expectation or purpose than that of being a gratified and an instructed spectator of the proceedings of this distinguished institution. To find himself, by the kindness of the council, admitted to the high honour of being associated with it, was a favour which he assured them he did in no degree promise himself, and which afforded him the deepest emotions of gratitude. He was sensible that this honour was mainly paid him in his public capacity, and he, therefore, took great pleasure in behalf of the Government and the country which he had the honour, however feebly, to represent, in making his public acknowledgments for this tribute of good feeling. *(Cheers.)* If he might be permitted to echo the words of his royal highness, he could not boast of being a practical farmer, but this he might say, that he had in his native land always been a diligent observer of the great interest in support of which they had assembled, and deeply anxious for its prosperity. *(Cheers.)* While he had the honour for a few years, by the favour of his countrymen, of holding the station of chief magistrate of his native state, it was his good fortune, in that official capacity, to contribute to the institution of an agricultural survey of the state of Massachusetts, some of the reports of which had reached this country. The distinguished nobleman on his right, the Duke of Richmond, had very much gratified him since he had come into the hall, by informing him that he himself had read, and with pleasure, some of the documents to which he (Mr. Everett) had now referred. He thanked them most sincerely for this very friendly and cordial reception, and permit him to say it did not fall on one who would receive it without grateful feelings—*(cheers)*. It was, indeed, with no ordinary emotion that he found himself, though in a foreign country, able to speak in public the language of his native land, and to find that his observations met with such a response from those to whom they were addressed—*(cheers)*. But it waa not merely in language that the two countries agreed; many had emigrated from these parts and taken with them the then modes of agriculture, which had gone on gradually progressing; and even their domestic animals bore traces of a common origin, and to the eye of the farmer the dumb animals, though they could not speak, proclaimed that they also came from old England—*(great applause)*. What an insensible clod of the valley should he be if he were not touched by that which was proclaimed to him by the dumb animals themselves—*(cheers)*. He was afraid he had already taken up too much of their time, and would now only detain them while he again expressed his acknowledgments for the great honour done him by this distinguished association, and he begged to offer his best wishes for its continued prosperity, and that of the agriculture of Great Britain generally—*(loud cheers)*.

The Duke of Richmond then read the following list of prizes.

CATTLE.

Short-horns.

To Messrs.. John Parkinson, of Ley Fields, near Newark, and John Booth, of Cotham, near Newark, a Short-horned Bull, five years and three months old, bred by Mr. Jonas Whittaker, of Burley, near Otley —30 sovs.

To Mr. Thomas Forest, of Stretton, near Warrington, Cheshire, a Short-horned Bull, three years and four months old, bred by himself – 15 sovs.

To the Rev. Charles Mordaunt, of Badgworth Rectory, near Cross, Somerset, a Short-horned Bull, two years and two and a-half months old, bred by Col. Cradock—20 sovs.

To Mr. John Booth, of Killerby, near Catterick, Yorkshire, a Short-horn Cow, five years and five months old, bred by himself—15 sovs.

To Mr. John Forrest, of Stretton, near Warrington, Cheshire, an improved Short-horn In-calf Heifer, two years and two months old, bred by himself—15 sovs.

To Mr. R. M. Jaques, of Silton Hall, near Northallerton, Yorkshire, a Short-horn Yearling Heifer, one year and nine months old, bred by himself — 10 sovs.

Herefords.

To Mr. John Yeomans, of Morton-on-Lugg, near Hereford, a Hereford Bull, three years and one month old, bred by himself—30 sovs.

To Mr. John Price, of Poole House, Upton-upon-Severn, Worcestershire, a Hereford Bull, eight years and three months old—bred by himself—15 sovs.

To Mr. John Price, of Poole House, Upton-upon-Severn, Worcestershire, a Hereford Bull, one year two weeks and three days old, bred by himself—20 sovs.

To Mr. John Yeomans, of Moreton-on-Lugg, near Hereford, a Hereford Cow, eight years and six months old, bred by Mr. Turner, of The Noke, Hereford, from the stock of Mr. Richard Yeomans—15 sovs.

To the Rev. J. R. Smythies, of Lynch Court, near Leominster, Hereford, a two years and five months old Hereford In-calf Heifer, bred by himself—15 sovs.

To Mr. John Walker, of Burton, near Worcester, a Hereford Yearling Heifer, one year and five months old, bred by himself—10 sovs.

Devons.

Messrs. J.S. Bult and J. Bond, of Kingston and Heathfield, near Taunton, Somerset, a Devon Bull, five years and three months old, bred by Mr. J. Quartley, of Molland, Devon—30 sovs.

To Mr. C. H. Webber, of Buckland Chellows, Devon, a North Devon Bull, three years and two months old, bred by Mr. Quartley, of Molland, South Molton—15 sovs.

To Mr. Thomas Stephens, of Atherstone, near Ilminster, Somerset, a Devon Bull, one year and seven months old, bred by himself—20 sovs.

To Mr. John Quartley, of Molland, near South Molton, Devon, a Devon Cow, seven years and two months old, bred by Mr. Francis Quartley, of Molland—15 sovs.

To Mr. John Quartley, of Molland, near South Molton, Devon, a Devon In-calf Heifer, two years and five months old, bred by himself—15 sovs.

To Mr. James Davy, of North Molton, near South Molton, Devon, a Devon Yearling Heifer, one year and two months old, bred by himself—10 sovs.

Any Breed or Cross.

Not qualified to compete as Short-horns, Herefords, or Devons.

To Mr. Thomas Child, of Arlington, near Hailsham, Sussex, for the best Sussex Bull—30 sovs.

To Mr. R. P. Rich, of Chippenham, the owner of the second-best Bull—15 sovs.

To the Honourable M. W. B. Nugent, of Higham Grange, Hinchley, Leicester, a Long-horn Bull, two years three months and eleven days old, bred by Mr. Horton, of Sherborne, Warwick—20 sovs.

To Mr. Richard P. Rich, of Chippenham, Wilts, a mixed or cross-bred Cow, six years and seven months old, bred by himself—15 sovs.

Mr. Richard Emery, of Storrington, Sussex, a Sussex Bull, two years and five months old, bred by Mr. T. Childs, of Michelham, Sussex—*Commended.*

Mr. T. J. Pensam, of Leigh, near Tewkesbury, Gloucestershire, a pure Long-horn In-calf Heifer, two years and four months old, bred by himself—15 sovs.

To the Honourable M. W. B. Nugent, of Higham Grange, Hinchley, Leicestershire, a pure Leicester or Long-horn Yearling Heifer, one year and three months old, bred by himself—10 sovs.

HORSES.

For Agricultural Purposes.

To Mr. Neeld, M.P., of Grittleton, near Chippenham, Wilts, a Cart Stallion, five years old—30 sovs.

To Mr. Henry Heath and Joseph C. Gadd, of Weare, near Axbridge, Somerset, a Cart Stallion, seven years old, bred by Mr. John Bibby, of Rodney Stoke, near Wells—20 sovs.

To Mr. R. Daintree, of Hemingford Abbots, St. Ives, Huntingdon, a Cart Stallion *(Sampson)*, two years old, bred by himself—15 sovs.

To Mr. George Thomas, of Shirehampton, near Bristol, a Cart Mare and Foal, the Mare bred by himself, and the Sire of the Foal belonged to Mr. Price, of Almondsbury, Gloucestershire—20 sovs.

To the Duke of Marlborough, of Blenheim Palace, near Woodstock, Oxon, a Cart Mare and Foal; the Mare was bred by the late Mr. Annesley, of Bletchington, Oxon—10 sovs.

To Mr. Richard Daintree, of Hemingford Abbotts, St. Ives, Huntingdon, a two years old Filly, bred by himself—10 sovs.

Mr. Estcourt, of Estcourt, near Tedbury, Gloster, a two year old Filly—*Commended.*

Thorough-bred.

To Mr. Hillyer Reeve, of Wroughton, near Swindon, Wilts, the thorough-bred Stallion Jack Tar, by Smilius, fifteen years old, out of Sheldrake, bred by the Duke of Cleveland, at his seat in Yorkshire—30 sovs.

SHEEP.

LEICESTER.

To Mr. Joseph Bennett, of Tempsford, near Biggleswade, Bedfordshire, a Shearling Leicester Ram, sixteen months old, bred by himself.—30 sovs.

To Mr. Samuel Bennett, of Bickerings Park, near Woburn, Bedfordshire, a pure Leicester Shearling Ram, sixteen months old, bred by himself.—15 sovs.

To Mr. Samuel Bennett, of Bickerings Park, near Woburn, a Leicester Ram, forty months old, bred by himself.—30 sovs.

To Mr. Joseph Bennett, of Tempsford, near Biggleswade, Bedfordshire, a Leicester Ram, thirty-two months old, bred by himself.—15 sovs.

SOUTHDOWN AND OTHER SHORT-WOOLLED SHEEP.

To Mr. S. Grantham, of Stoneham, near Lewes, a Southdown Ram, fifteen months old, bred by himself.—30 sovs.

To Mr. Jonas Webb, of Babraham, near Cambridge, a Southdown Shearling Ram, sixteen months old, bred by himself.—15 sovs.

To Mr. Jonas Webb, of Babraham, near Cambridge, a Southdown Ram, sixty-four months old, bred by himself.—30 sovs.

To Mr. John Harris, of Hinton, near Abingdon, Berks, a pure Southdown Ram, twenty-eight months old, bred by himself.—15 sovs.

To Mr. Samuel Webb, of Babraham, near Cambridge, a Pen of Five Southdown Shearling Ewes, sixteen months old respectively, bred by himself.—10 sovs.

To Mr. James Beaven, Jun., of Thornham, near Devizes, Wilts, a Pen of Five Southdown Shearling Ewes, seventeen months old respectively, bred by himself.—5 sovs.

LONG-WOOLLED SHEEP, NOT QUALIFIED AS LEICESTERS.

To Mr. Charles Large, of Broadwell, near Burford, Oxon, a New Oxfordshire Shearling Ram, sixteen months old, bred by himself—30 sovs.

To Mr. Charles Large, of Broadwell, near Burford, Oxon, a New Oxfordshire Long-woolled Shearling Ram, fifteen and a half months old, bred by himself—15 sovs.

To Mr. Thomas Wells, of Hampnett, near Northleach, Gloucestershire, an improved Cotswold Ram, forty months old, bred by himself—30 sovs.

To Mr. Charles Large, of Broadwell, near Burford, Oxon, a New Oxfordshire Long-woolled Shearling Ram, twenty-eight months old, bred by himself—15 sovs.

To Mr. E. Smith, of Charlbury, Oxon, a Pen of Five Shearling Long-woolled Oxfordshire Ewes, fifteen-and-a-half months old respectively, bred by himself—10 sovs.

To Mr. Charles Large, of Broadwell, near Burford, Oxon, a Pen of Five Shearling Long-woolled Ewes, sixteen months old respectively, bred by himself.—5 sovs.

PIGS.

To Mr. Joseph Thomlinson, of Laverock Bank, near Liverpool, Lancashire, a Leicester Boar, two years and six months old, bred by Mr. Thomas Crofton, of Holywell, near Durham (for sale at the auction)—15 sovs.

To Mr. Barnard, M.P., of Gosfield Hall, near Halstead, Essex, an improved Essex Boar, two years and two months old, bred by himself (for sale by auction)—5 sovs.

To Mr. Joseph Thomlinson, of Laverock Bank, near Liverpool, Lancashire, a Leicester Sow, two years and nine months old, bred by Mr. Wm. Donald, of Salway House, Cumberland (for sale by auction)—10 sovs.

To Mr. Barnard, M.P., of Gosfield Hall, near Halstead, Essex, a Pen of Three improved Essex Sow Pigs, eight months old respectively, bred by himself—10 sovs.

EXTRA STOCK.

Mr. Henry Brown, of Stawell, near Bridgwater, Somerset, a Devon Ox, five years and five months old, bred by Mr. R. Hodge, of Goodhurst, near Bridgwater (for sale at the auction)—*Commended.*

Mr. Woodward, of Bredon's Norton, near Tewkesbury, Worcester, a pure short-horn fat Ox, four years and five weeks old, bred and fed by himself—*Commended.*

To Mr. John Yeomans, of Moreton-on-Lugg, near Hereford, a Hereford Yearling Heifer, one year and six months old, bred by himself—5 sovs.

To Mr. Thomas Miller, of Castle Farm, near Sherborne, a five months old Calf, bred by himself—2 sovs.

Mr. R. Beman, of Donnington, a Cotswold Wether, forty months old, bred by himself—*Highly commended.*

To Mr. W. Ellison, of Sizergh Castle, Kendal, Westmoreland, a Sizergh Boar, twenty-three weeks and five days old, bred by himself—1 sov.

To Mr. W. Ellison, of Sizergh Castle, a Sizergh-bred Sow Pig, twenty-three weeks and five days old, bred by himself—1 sov.

GLAMORGANSHIRE HEIFERS.

Mr. Edward Bradley, of Treguff Place, Cowbridge, obtained the two prizes of 10*l.* and 5*l.*, respectively offered by Sir Charles Morgan, for the best Glamorganshire.

JUDGES OF STOCK.

SHORT HORNS.—Charles Stokes, of Kingston; John Wright, of Romelly; William Trinder, of Wantage.

HEREFORDS.—John Buckley, of Normanton-hill; Thos. Wells, of Hampnett; Thomas Chapman, of Stoneleigh.

DEVONS.—Emmanuel Pester, of Mount Edgcumbe; Thomas Cooper, of Norton; Sir Francis Lawley, Bart., of Middleton-hall.

MIXED BREEDS.—John Hall, of Wiseton; John Ellman, of Glynde; E. J. Franklyn, of Ascott.

HORSES.—R. Newton Shawe, of Kesgrave-hall; John Clayden, of Littlebury; John Raymond Barker, of Fairford Park.

LEICESTER SHEEP.—Joseph Burgess, of Hurst Pierrepoint; Francis Browne, of Welbourne; John Elliott, of Chapel Brampton.

SOUTHDOWN AND OTHER SHORT-WOOLLED SHEEP.—Robert Boys, of Eastbourne; Henry Lugar, of Hengrave; Peter Purves, of Saffron Walden.

LONG-WOOLLED SHEEP. — William Gillett, of Southleigh; Jonathan Clarke, of Weedon; Richard Hewitt, of Dodford.

PIGS.—Jesse Kemp, of Utterby-grove; Thomas Leonard, of Broxtell; Samuel Wiley, jun., of Brandsby.

The catalogue of the beasts, horses, sheep, and pigs exhibited, contained 510 lots, and comprised the various breeds of the kingdom.

The CHAIRMAN said he should now propose the healths of the successful competitors for the prizes in horned cattle—*(cheers)*.

The Rev. Mr. SMYTHIES said, I have been most unexpectedly called upon to return thanks for the toast which you have just given, as I was not aware even that I was one of the successful candidates till the noble Duke read my name in the list a few minutes ago; but I feel so highly gratified at the success I have met with, that I should be guilty of ingratitude if I declined to respond to the toast in the best manner I am able. When I consider how difficult it is, in these days of universal energy and enterprise, to succeed in any undertaking, and when I consider also that these rewards are open to the whole of the united empire, I cannot but feel highly gratified at carrying off the prize. I think I may congratulate you, sir, and the Society at large, upon the choice of the locality which the council have made for holding our annual country meeting this year; there is no place which we yet visited where we have been more kindly or more warmly received than in this city. But it is not the gorgeous banquet, splendid as it was, to which we were invited yesterday—it is not the individual urbanity of the Chief Magistrate himself, exhibited as it was towards every member of the council—it is not the liberality that has been displayed towards us by all the institutions in the city, by granting a free admission to our members—it is not the kind and liberal manner in which the use of the splendid rooms, in which I have now the honour of addressing you, which has been so freely granted to us by the proprietors—it is none of these things, sir, but it is the cordiality with which we have been received as agriculturists by the great merchants of the most ancient trading city in the empire, that has afforded to my mind a feeling of the most pure, unmixed, and unmitigated pleasure. There has been an attempt of late to persuade the people that the interest of the farmer is at variance with, and opposed to, that of the merchant and the manufacturer; but the enlightened citizen of Bristol appears to have discovered that the bright sunshine of uninterrupted prosperity can not long illumine the abodes of one class of the population without speedily extending its genial influence to every other; they seem to have discovered the great truth, that we are bound in one indissoluble bond, and that we must sink or swim together. It would ill become me, sir, to occupy your time at any greater length, surrounded as I am by so many persons whose practised eloquence has frequently arrested the attention of a listening and admiring senate, and who, from their information, from their habit of addressing large assemblies, from their intercourse with the world, are far more capable of affording information or amusement than I can be. But before I sit down, I must beg to be allowed to return my most grateful thanks to the noble Duke and the noble Earl, to whose zeal, energy, and perseverance, we are mainly indebted, not only for the formation of this Society, but for its present unhoped for state of perfection.

The CHAIRMAN had now to give the "Healths of the successful Candidates in the Show of Sheep and Pigs." Though he united them it was not under the idea that there was great cry and little wool—*(laughter)*.

Mr. PUSEY, M. P., returned thanks, and proposed "The health of Dr. Buckland."

Dr. BUCKLAND rose to return thanks, and was loudly cheered on rising. He was old enough to remember the time when he first turned his attention to the subject of zoology, which had been the cause of his name having been mentioned on the present occasion with so much honour—an honour which he gratefully acknowledged. He well remembered the time when geologists were obliged to appeal to the agricultural surveys of certain counties of Great Britain for the only scanty information then published as to the nature and qualities of soils and subsoils, to guide them in their investigations of the subjacent strata, the history of which they were then beginning to explore. But the tables were now turned, and the time had now arrived when it was admitted by all who had brought the most profound scientific knowledge to bear upon the subject of agriculture that there lay at the bottom of scientific agriculture, a fundamental necessity of correct knowledge as to the geological condition and chemical ingredients of those rocks and strata which give origin to soils, and to which the attention of the geologist is especially directed. This was a scientific truth, which our countrymen had been rather tardy in acknowledging; but it was also a truth which had long been duly appreciated by our transatlantic brethren in the United States—by those brethren who were so ably represented by his hon. friend, if he would permit him to call him so—by that distinguished man who now fills the high station of minister from that great republic to this kingdom—by that accomplished scholar and enlightened statesman with whom he had the honour to be acquainted for more than twenty years, and to whom the western world had for many years looked up as to one of the literary and scientific luminaries of America. That gentleman would bear witness to the fact that the United States of America had seen the value and necessity of combining the study of agriculture with that of geology; that during the last quarter of a century each individual state had devoted large sums of public money to such combined scientific surveys of their respective territories. He could appeal to Mr. Pusey, their vice-president, to bear witness to the fact of his having submitted to him, in December last, at Oxford, a splendid work then just received, in two 4to. volumes, on the "Agriculture and Geology of the State of Massachusetts," by the eminent Professor Hitchcock; in which the first page he opened contained an account of the reclamation of peat-bogs in transatlantic Berkshire, of experiments identical with those which Mr. Pusey had conducted with such perfect and profitable success in that Berkshire which he represented in Parliament, and with which volume Mr. Pusey was so enchanted that he instantly seized and borrowed it, and to this hour he had not returned it. (*Immense laughter.*) There was but one point, relative to which he would trespass on the meeting for a few moments. It was a point which had been brought before their notice at Cambridge, and respecting which it was in his power to call their attention to an example so excellent that they would not think he was wasting their time if he proceeded to do so. At Cambridge the question was mooted, how far it was desirable to establish through the influence of that society, example farms and experimental farms. (*Hear, hear.*) It was impossible to expect that the tenants and cultivators of the soil, who were not the proprietors, should consent to be the victims of experiments, some of which might be successful, and others of which might fail. (*Hear, hear.*) It was in vain that the society had found its attention called during its short but most profitable existence, to such admirable works as Morton on the "Nature and Property of Soils," Liebeg on "Agricultural Chemistry," Professor Johnston's "Lectures on Agricultural Chemistry and Geology," delivered at Durham, and the lectures of Professor Daubeney on Agriculture, at Oxford. It was in vain that the cultivators of this country had the means of reading such works, unless the proprietors, who had the means themselves of higher education in science and literature, would come forward and show their tenants, by their own practice and example, what could be done in conformity with the motto of the society, by uniting "practice with science." (*Cheers.*) He should be ungrateful for favours received within the last two days—he should not be discharging the duty which he owed to the gentlemen assembled if he were not to state to them the extraordinary delight he had felt in witnessing the example, the most useful, most successful example he had ever seen in practical agriculture, which within twelve miles of Bristol had been set by his right hon. friend the Earl of Ducie. (*Hear*). They had heard much of the benefit of thorough draining and subsoil ploughing, but he knew but few examples in England (though there were many in Scotland)—and some of these had been most ably pointed out that day, moreover, in the lecture of his friend Mr. Smith, of Deanston, to whom agriculture owes so much—he knew of but few cases except that of the example farm of Lord Ducie, wherever it had been shown practically what could be shown by the application of science to agriculture. It was a fact that about 200 acres, which, seven years ago, was for the most part a morass and a wood, and the best of it grass land not worth 25s. an acre, was now throughout worth from 3*l.* to 4*l.* an acre, and was producing large wheat crops on every field in each alternate year, and artificial green crops sufficient to feed a splendid team of Clydesdale horses, an enormous flock of Leicester sheep, and a herd of short-horned oxen and cows, without making or using a single ton of hay throughout the year. He could not do better than recommend every farmer present to go and see what had been done by the Earl of Ducie, and imitate his example. (*Cheers*). Let them go and see not only what had been done in the improvement of the productive powers of the soil, but also what had been done in improved machinery in aid of agricultural labour. Let them look to the instruments for which they gave prizes last year at Liverpool. Let them look at the Uley cultivator and steam-engine, and ploughing and other instruments, all made in his lordship's own smithy at Uley, near Stroud, and then say if his lordship had not laid on the agriculturists of the kingdom a debt of obligation which no living man could adequately repay. (*Hear, hear.*) He hoped so splendid an example would be duly followed; and he was happy to say that by his own (Dr. Buckland's) humble instrumentality the Uley cultivator, made by the manufacturers of Lord Ducie, and the plough which gained the society's prize last year at Liverpool, were now ploughing their way across the waves of the Atlantic into the southern hemisphere, towards New Zealand; and he should hold it ever as one of his proudest and most pleasing recollections that he had in any way contributed to send amongst the docile and interesting natives of New Zealand examples of two of the most improved and most efficient scientific instruments which, under the genial influence of that society, had been produced to aid the cultivator of the soil of the United Kingdom and its most distant colonies in the remotest regions of the globe. (*Loud cheers.*)

His Royal Highness the Duke of CAMBRIDGE said he rose to propose a toast which would require very few words from him, for it was sufficient for him merely to name it to ensure its reception with acclamation—the toast was "Prosperity to the Royal Agricultural Society of England."

The Duke of RICHMOND had to propose for their acceptance a toast which he was quite sure there was no individual present who would not drink as it deserved, for he believed he might say, when he was speaking of the farmers of England, that they felt it to be their greatest gratification to express their gratitude where they considered it to be due. If he had not volunteered to read the awards, perhaps he might have addressed them at much greater length than it was now his intention to do; but he thought they ought not to separate without drinking the health of his friend on his right (Mr. Handley), who had been elected their president. (*Cheers.*) He saw by the manner in which they received the mention of that toast, that they confirmed the original appointment of Mr. Handley. (*Cheers.*) In Mr. Handley's presence, he would say no more of him than that he was one of the first individuals who supported the institution, the members of which he (the Duke of Richmond) had now the honour to address; that he not only attended and did his best in speaking at their first meeting, but that he wrote a pamphlet, which was circulated among the farmers of the country; and which, he thought, very much supported those who carried out the formation of the society—(*cheers*). He believed Mr. Handley to be an honourable country gentleman, and he knew of no appellation in the world that conveyed to him a higher honour than being considered a real English country gentleman—(*cheers*). That appellation, in his mind, applied to one who would do his best in the station of life to which he had been called, who would act as a magistrate, because it was necessary that men of character should fill the office, who would mix with the farmers in every part of the country, because it was necessary that the landlord and tenant should be acquainted with each other—(*cheers*), and who never would forget that the duty of both was to promote to the utmost of their power the welfare of the country in which they lived, and also not to forget the labouring classes—(*cheers*). He would not further trespass on their notice at this late period of the evening, and must, therefore, now ask every person present, who agreed with him that it was their duty to pay respect where respect was due, to rise one and all and drink "The health of Mr. Handley, his happiness and welfare"—(*three times three and loud cheering*).

The CHAIRMAN, in returning thanks, said that difficult as it would be under any circumstances adequately to acknowledge a compliment proposed in such terms, and adopted in an assembly like this in the manner the one just offered to them had been proposed and received, they would believe him when he said the difficulty was increased by his own conviction how small were his claims to the position in which he had been placed by the indulgent partiality of the society. *(Cheers)*. His noble friend had told them all, and more than all, he (the chairman) had ever done to merit the compliment he had just received at their hands. He had had the good fortune, it was true, to be associated from the commencement of this society with his friend Lord Spencer, and the Duke of Richmond. He had then endeavoured to enforce on those who did him the honour to read the letters he addressed to Lord Spencer his opinion, that advantage would be derived from such a society as this. He was induced to hope that the inefficiency of his services had, at all events, not been prejudicial to the interests of the society, inasmuch as he found that they now numbered amongst their members considerably more than 6,000 persons. *(Cheers)*. And, let him enforce upon them the fact, that they were 6,000 of the nobility and owners and occupiers of the soil *(cheers)*, every one of whom felt the most intense interest in the great object the society had in view, viz., to augment the means of human subsistence. *(Cheers)*. If the society had done nothing more, it had at least made agriculture fashionable. *(Cheers)*. They had in every part of the kingdom gentlemen who were anxiously looking out for the purpose of testing every experiment the society might recommend as worthy of consideration. They had in every part of England gentlemen who were most carefully and anxiously investigating the quality of soils and every description of seed, in order to ascertain the most preferable; and, in fact, they were paying that attention which had hitherto never been given to those practical means in agriculture which agriculturists knew were so essential to success. But it was not on practical means alone they depended; their motto was "Practice with science," for they hoped to bring science to bear on the agriculture of the country. In this they had been eminently successful, and if time allowed he could tell them the names of those, the first in the ranks of science, who had given the right hand of fellowship to agriculture. *(Cheers)*. That room was honoured with the presence of Dr. Dealty, Professor Marchison, Dr. Playfair, Professor Daubeney, and many others of equal celebrity; *(cheers)* and the society had enrolled among its members men who had effected in agriculture improvements which, compared with those of a few years since, were as the works of a timepiece to the movements of a 5*l*. watch. He hoped this society would continue to prosper as it had hitherto done. He then proposed the "Health of the Committee and Directors of the Victoria Rooms," who had kindly placed them at the convenience and use of the society. *(Cheers)*.

The meeting then broke up.

THURSDAY.

THE PAVILION DINNER.

This took place at 4 o'clock, in the Pavilion, a description of which appeared in a former number. The ladies gallery, which was calculated to hold 300, was completely filled, and formed an object of much attraction.

Mr. Handley occupied the chair, and His Royal Highness the Duke of Cambridge sat on his right. Amongst those who sat at the same table, we observed His Grace the Duke of Beaufort, Earl Somers, the American Envoy, the Marquis of Worcester, Earl Chichester, Earl of Ilchester, Earl Fostescue, the Hon. Capt. Spencer, the Hon. Grantley Berkeley, the Mayor, the High Sheriff, Dr. Buckland, Mr. Smith, of Deanston, Mr. G. W. Hall, Mr. Marmont, the Duke of Richmond, Earl Spencer, the Marquis of Downshire, Lord Portman, the Earl of Zetland, and other distinguished individuals, sat in the body of the room.

The CHAIRMAN.—I give you the first toast of the evening, "The health of her most gracious Majesty, the Queen." *(Great cheering.)*

The CHAIRMAN.—"The Queen Dowager, Prince Albert, Albert, Prince of Wales, his Royal Highness the Duke of Cambridge, and all the members of the royal family." *(Great cheering.)* I am well aware that it requires no observations from me to induce the toast to be cordially drunk in a meeting of British farmers. *(Cheers.)* But there are a few circumstances investing it with additional interest, to which you must allow me to allude. Since we met twelve months ago, it has pleased almighty God to restore the illustrious lady whom I have mentioned, to health. *(Cheers.)* Since we met last year, his Royal Highness Prince Albert, with that characteristic anxiety to promote the best interests of the land of his adoption, has been pleased to authorize his name to be enrolled as a member of this Society. Since last year her Majesty, her royal consort, and the nation have been blessed with an heir to the throne, who is destined I hope but at the lapse of many, many years, to wield the sceptre over these kingdoms; and it is now our good fortune to be honoured with the presence of his Royal Highness the Duke of Cambridge, *(Rapturous cheering)*—an illustrious member of that family to whom we are attached by the strongest ties of loyalty, devotion, and esteem—the son of George III. *(continued cheering)*,—who, it will be remembered, rejoiced in the designation of the farmer's king. The illustrious Prince to whom I have alluded, treading in the footsteps of his revered parent, has throughout the whole course of his life, but more immediately and directly as one of the supporters of this Society, done all that in him lay to forward the objects for which we are now assembled. I call upon you to drink with all the honours the toast I have now given. *(Great cheering.)*

The Duke of CAMBRIDGE.—I rise to return you my most sincere thanks for the honour you have conferred upon me in drinking my health in connection with the toast of the Queen Dowager and the royal family, and I am sure that every one present must rejoice at the expression of loyalty with which the toast has been received. *(Cheers.)* With regard to myself, I can only assure you that I have been most truly gratified; indeed it is impossible for me to express my feelings at the manner in which you have received the mention of my name. *(Cheers.)* Since my arrival here I have witnessed a most gratifying sight; and unfortunate it is for me that this should be the first time that I have attended your meetings. I regret not having done so, but I can assure you that the fault will not be mine should I be absent on another occasion. *(Cheers.)* I can assure you that what I have witnessed has afforded me greater gratification than I can find words to express, and this, conjoined with the honour of addressing so numerous and interesting an assembly, makes me say what I am sure you will not be surprised at, that I shall wish for the honour of meeting you again. (*Cheers.*) I look upon the establishment of this Society as one of the greatest benefits that have been conferred upon this country for many years. It must be particularly gratifying to every one who wishes well to the land of their birth, to see so many united together for the advancement of the interests of agriculture; but there is another thing which I number among the greatest advantages arising from the Society, and it is the connection it forms betwixt landlord and tenant, (*cheers*)—thus leading to the conviction on the part of the tenant, that his landlord wishes to make him happy and comfortable. But there is another advantage, and it is the bringing together of persons from all parts of the country, who communicate improvements to each other, and in this produce a general improvement all over the country. You may readily believe, therefore, that I am a friend to this Institution, and it is my earnest wish that it may go on from year to year increasing in usefulness and importance. (*Cheers.*)

The CHAIRMAN—The next toast is the health of the foreign ministers present. (*Cheers.*) I am aware that in strict diplomatic language, the term "foreign" must be applied to his excellency on my right, the minister for the United States, but in the reception you will give him, you will show that you have not forgotten that his ancestors were your ancestors (*cheers)*, and that we are united in the ties of a common language, and of common blood; that it was from our shores that those enterprising men embarked who have raised a waste into a mighty nation—in a word, to borrow language peculiar to our class, it is the children of old England who have taken occupation of a new continent, who have taken possession under a lease, which I trust will be advantageous and interminable. (*Cheers.*) I am sure you will allow me to request of my distinguished friend that when he communicates with his relations on the other side of the Atlantic, that he will assure them how welcome they will always be to the shores of the mother country, and to remind them that her avocations are all based on peace, and that we earnestly pray that both countries may long continue to be united in the bonds of good will and mutual advantage. I will no longer detain you from the expression of good feeling which I am sure you are prepared to give. I ask you to drink to the health of the "Hon. Henry Everett." (*Great cheering.*)

The Hon. HENRY EVERETT—I beg you to believe me duly sensible of the kind feeling which you have been pleased to express towards myself and my country. (*Cheers.)* I assure you, without affectation, that I want words to do justice to my emotions. To be received with so much kindness, so far from my home, by such a company as this, almost, I confess, overpowers me; and let me say, that in no part of this great and prosperous country, could such a reception be more welcome to me than here. It is a singular circumstance that the history of North America begins in this city, for its first chapter was written in the chamber of the Merchant Venturers. I am not now alluding to that little coincidence to which I referred on a previous occasion, that of Columbus having resided here for some time. This was merely casual; but Sebastian Cabot, the great discoverer—the man who, in 1497, sailed from these waters, discovered Newfoundland, and ran along the coast to Cape Florida; he was a native of Bristol, and was fitted out by the enterprize of your merchants. You all know under whose auspices the settlement of New England originated; why the rock, so celebrated in its history, was called, and is still called, *Plymouth Rock.* The father of William Penn, the great founder of Pennsylvania, lies buried in the vaults of St. Mary Radcliffe, and though William Penn was not a native of Britain, still I have no doubt it was owing to the adventurous stories he had heard detailed by those who had been there, which first turned his attention towards a distant settlement; and it seems to be the purpose of the Bristol merchants to keep up the communication which they originally began. This morning I ascended the tower of Blaize Castle, and a lovely scene does it command; a more beautiful panorama I never saw, but there was one object which arrested my attention. I could scarcely discern it, but I saw the masts of that mighty steam-ship, the Great Western, which the day after to-morrow is to launch on the deep. You desired me to let the people of America know the kind feelings which were expressed towards them at this table. Why, in fourteen days from the time I am now speaking, the tidings will have arrived—almost before the cordial cheer has died away in this pavilion the news will have reached. And I assure you that this community of feeling—resting on common descent—cemented by a common language and common blood, is not confined to commercial operations alone—this is the least important; but the common origin, and the ties of ancestry actually make us one people for ever and ever—*(Great cheering)*—for every purpose but that of political jurisdiction; social, literary, moral, and intellectual—those ties do make us a common people. Every thing that emanates from your press is received and welcomed by us, and most happy am I to see that our authors are received with favour by you. My much respected friend, Dr. Buckland, was pleased to pay a high compliment to his transatlantic co-operators; but I can assure him that his own excellent works are as well known in the States as in Great Britain. (*Cheers.)* We have our eye on what you are doing for the interests of agriculture. The climate of new England, though severer than that of Great Britain, ranging as it does to greater extremes, is not dissimilar, so that the people there have full means of profiting by your exertions. No works are read with greater avidity by our people than those which treat of agriculture — treat, for instance, of such a subject as that so ably elucidated yesterday (Mr. Smith's lecture). Thorough draining has received a great deal of attention from us, and I am determined that Mr. Smith's pamphlet shall be transmitted by this same steam ship, *(cheers*), and I have no doubt that it will be received and perused with much satisfaction. I wish the intelligent agriculturists of England to know that the benefit of their improvements and suggestions is literally sown *broad cast.* *(Cheers, and laughter*). You cannot by your improvements shorten the bones of a pig, straighten the back of a cow, or make the fleece of sheep finer, but in due time the effect of all your improvements is felt across the Atlantic *(Hear, hear)*; and I believe that this community of pursuits in the most peaceful of all departments of national enterprise—as his Royal Highness has well remarked—cannot fail to make both countries good friends, both as people and nations; and by Mr.

Smith, of Deanston, teaching us his system of thorough drainage, I believe it will draw off the bitter waters of international jealousy. (*Immense cheering*). I believe it will create a warm and genial soil for the production of the peaceable fruits of harmony. (*Cheers*). I most cordially respond, and I wish to express my approbation of the sentiment expressed by the chairman, that there may be peace betwixt the two countries. (*Cheers*). I wish from the bottom of my heart for the speedy and honourable adjustment of all the existing differences; and most happy am I to say that from all the means of information at my command that such an event is most likely to take place. (*Cheering, which continued for some minutes*). And when this little cloud is once blown over, my wish is that the two nations may engage in advancing those great objects which improve the condition and ennoble the character of man, and that England and America once united, they could put, I believe, the whole world to defiance were it necessary. (*Cheers*). I will add nothing more, but simply tender to you my heartfelt thanks for this unexpected, kind, and hearty reception. (*Cheers*).

Mr. Everett again rose. It is scarcely necessary for me to say, that having so recently occupied your time, I would not again have risen had it not been by command. I have been honoured to propose a toast, which I am sure you will receive with the greatest enthusiasm; "The prosperity of the great society under whose auspices we are now assembled." This is a duty which I can assure you I discharge with the highest satisfaction. I owe you a debt of gratitude since you were kind enough to elect me an honorary member—a distinction I can assure you which I shall always appreciate. But it is for other reasons than personal ones that I propose this toast. I am persuaded that there is no institution of the kind doing in the world greater good than the Royal Agricultural Society of England, and let me add that the good it accomplishes is of the highest value. (*Cheers.*) It has been said that the man who makes two blades of grass grow where there was only one before, is a benefactor to his race; but what must be said of the labours of this society, and of the able, sagacious, and learned men whom it brings together; the man of science united with the man of practice—men of the highest station in the realm uniting with the cultivator in the same pursuit—not only making two blades grow where only one grew before, but even doing this good in a quadruple ratio? (*Cheers.*) I have been told, nay, the statistics have actually been put into my hand, whereby it was made plain that, by the improvements introduced within the last fifteen years, not two plants only, but four, and even six have been grown where only one grew before. (*Cheers.*) To do this is not merely to be a benefactor but a creator. If you can double the quantity of the food of beasts and man, have you not doubled the extent of your territory? (*Cheers.*) Is it not as if you had stretched out your coasts into the bosom of your sea, in order to make another England rise up. (*Great cheering.*) No, make another island like this rise up with all its deep waving fields, its green and gentle slopes. All this you have done, and all has been subjected to the sway of your youthful and beloved Sovereign. (*Great cheering.*) All this without the cost of a single pound which does not come back in benefit, and without shedding a drop of blood. (*Cheers.*) What is there in all the achievements of Alexander and Cæsar, which can be compared to a victory like this? (*Cheers.*) These are the peaceable triumphs of your society—triumphs not confined to yourselves, or your own dominions, but of which all nations share the benefit, and to which all nations wish God-speed. (*Great cheering.*)

Earl Spencer:—The toast with which I am intrusted is one that requires no argument from me to induce you to drink it. The toast that I have to propose to you is, "Success to the agriculture, the manufactures, and commerce of the country." (*Cheers.*) I know in addressing this assembly that I require to adduce no argument to induce you to accept the toast: had argument, however, been necessary, I would have referred you back to that which had made this country a great country among the nations. And what is that? It is the union of our agriculture, our manufactures, and our commerce. (*Cheers.*) It is this union which has rendered this little island which appears on the map of the world like a mere spec, one of the most powerful nations in the world. It has been the united energies of the people; it has been their exertions in their different pursuits; it has been the accumulation of what they have produced which has made us what we are, and what we hope in God we will long continue to be. The three great pursuits to which I have referred are intimately connected together. It is one of the wisest dispensations of Providence that we are united in this country as in every other country, by dependence on one another; and should any one of the three great interests fail, you may depend upon it that the others will soon feel the loss. This being the case, although I know that I could address you with confidence, and that you would from a friendly feeling drink success to those other scources which the toast embraces, but I am able to ask you to drink it from a regard to your own individual interests. Those three branches are running a race; and you have heard from the American minister what a prominent place this city has attained in the race, and you have received an admirable illustration of this, drawn from the circumstance of the Great Western steamship, which is now about to start on another voyage. With respect to manufactures, you know the enormous strides they have taken. You know how they have absorbed the advantages of every scientific discovery; how anxious those engaged have been to apply chemical discoveries, mechanical skill, and every other kind of knowledge to advance the prosperity of their enterprises. With regard to agriculture, although we have not availed ourselves of the assistance which scientific and practical knowledge could have afforded, still I think I can confidently venture to state, that in agriculture we stand very high, if not the highest, indeed, among the nations of the earth. I have shewn you our manufacturing triumph, but when I consider the breed of our domestic animals, I have no doubt we are as much before every other nation in that respect, as we are in the progress of our manufactures (*Cheers*). There is one thing that we farmers want; we do want the application of science. It was to advance this object that this society was established. If it proceeds as it has done, and which I hope it will continue to do, I hope and trust that if manufactures have derived advantage from science, that we, as farmers, shall also gain by the application of every one of those sciences that are more particularly adapted for us. I am confident that such will be the result of our society. It was on this ground that I was eager for its institution; it is on this ground that I am eager for its continuance, and the assembly which I now address convince me that those wishes will be accomplished. If you go on from year to year extending your sphere of usefulness, exciting from one end of the country to the other a spirit of emulation among the farmers—and as I see a great improvement in this respect, namely, in more accurate attention being paid to the results of experience and experiments, for I need not tell you that the only test which ought to be applied to theory is practice—I am confident that my most sanguine expectations will, ere long, be realised *(Cheers)*.

The DUKE of RICHMOND—The toast that I have the honour to propose, is the "Health of the Labourers" *(Cheers)*. Interested as all classes are in the welfare of each other, I know of no body of men who have stronger claims upon the occupiers and owners of land, than the class without whose aid and assistance the soil would not be cultivated. We know well of how much advantage it is to us all that we should have skilful shepherds, careful herdsmen, clever shearers, good ploughmen, honest and industrious labourers *(Cheers)*. We know them to be a peaceable, an orderly, a loyal class; and we cannot disguise from ourselves the fact that they have upon many occasions exhibited the greatest patience under trials. If you will permit me, I will speak to you as an English country gentleman *(great cheering)*, and will state that the class to which I am alluding perform towards each other those offices of kindness and charity, which flow from the purest feelings, and the exercise of which tends to ennoble the owner of the proudest castle, as well as the occupant of the meanest cottage. I am happy to say that associations for the reward of honest, industrious, and meritorious labourers have been established in many parts of the country. It has been my good fortune to attend many of them; and may I, as a country gentleman, be permitted to recommend those who have not already done so, to take the earliest opportunity of attending those meetings, where the clergy, the owner, the occupier, and the labourer sit at the same festive board *(Cheers)*. It is not possible for any man to attend such meetings without experiencing the liveliest feelings of gratification at the laudable pride, the honest pleasure, the sincere gratitude manifested in the manly countenance of the successful candidate. He feels repaid for former privations, amply rewarded for his self-denial and good conduct. He returns home with increased kindly feeling towards his employer, and with a determination to instil into the minds of his children those principles he has so successfully practised himself, and for which he has just been rewarded, and rewarded too by those by whom he had been esteemed through life. I feel also that in a great meeting like this, of the farmers of England, that we should not forget that a time may arise, unfortunately for the cause of humanity and the real interest of nations, when war may unhappily desolate the world. If, unfortunately, these horrors should be our destiny, I ask you whether you would not instantly look to the class to which I have been referring? Must we not look to men to recruit the ranks by whose good conduct and united exertion our national honour may be preserved unsullied, our colonies preserved, our commerce protected, and our native land kept secure? *(Great cheering)*. I know well that it is not necessary for me to trouble you much on this subject, because, from the experience I have had—for I have taken every opportunity since the war was ended of mixing with farmers and labourers—that they will receive with enthusiasm the toast I have to propose. *(Cheers)*. I trust I may, without presumption, be permitted to say a few words upon the subject of the meeting to-day, and to heartily congratulate you on the increased and increasing prosperity of this great society. Its exertions have already produced the greatest benefit; and I fondly anticipate that if it continues to be supported as it is at present by the intelligent farmers of England, that its influence will far extend, not only as my noble friend Lord Spencer said, in the way of increasing a desire for agricultural improvement, but in the way of pointing out the means by which the objects in view will be obtained. *(Cheers)*. I feel that the society does one thing which would be enough for me, although it did nothing else. I feel it brings agriculturists together from all parts of the country, and it is not possible that we can meet without deriving much information, and at all events we can never part without realizing what we have hitherto experienced, that every individual has acquired a new friend, and has never made an enemy. *(Cheers)*. I will only say that the question of agricultural improvement, involving as it does such mighty consequences to the country, is a thing most worthy of our most anxious solicitude, and calls for the efforts of every one who loves the land of his birth. I will now only repeat what I said on a former occasion, that I have received from the farmers of England what places me under a debt of gratitude so heavy that I do not expect to be able to repay it; but if you will take the will for the deed I venture to say that you will find no man more anxious to promote the interests of agriculture than the individual who addresses you. *(Cheers)*. I now ask you to join me with true British cheers in drinking to "the Agricultural Labourers." *(Great cheering)*.

Lord PORTMAN: I am called upon probably because I happen to be the feeblest *(laughter)* for the purpose of offering in your name an expression of gratitude to those who have served us kindly. *(Cheers)*. Gentlemen, the strong, the manly, the vigorous cannot feel so grateful as we poor creatures feel for the attention we have received, and the good arrangements made for enabling us to assemble without inconvenience, without pressure, but comfortably, as Englishmen like to be. *(Laughter)*. For this we have to thank the magistrates, the sheriff and corporation of this great city; and not only do we, the men of England, offer our acknowledgments, but the ladies too *(immense cheering)* who by their presence have adorned the Pavilion. In the name of us all therefore, I present our united acknowledgments. *(Cheers.)* His lordship then alluded to the eloquent remarks of his Excellency the American minister, relative to the increase in the number of plants, and stated that the first successful experiment was tried by a gentleman belonging to Gloucester, in a meadow not far from Bristol. He also illustrated the benefit which arose to agriculture from the application of the arts and sciences, by referring to the many useful and ingeniously contrived implements which had been exhibited, many of which had been manufactured in Bristol. His lordship concluded by proposing "The Mayor, the High-Sheriff, Magistrates, and Corporation of the City of Bristol." *(Great cheering.)*

The MAYOR of Bristol returned thanks. He felt deeply the compliment which had been paid to himself and his colleagues, and he could not avoid, he said, expressing his personal gratification at having enjoyed the good fortune to officiate as Mayor upon so interesting an occasion. (*Cheers*). He felt that commerce and agriculture were most intimately connected; they could not exist without each other; and for the credit of Bristol he could state, that no attempt which had ever been made for fomenting a bad feeling towards either interest had succeeded. (*Cheers*).

The Duke of Cambridge: A most agreeable duty falls upon me to discharge, and I am sure you will receive the toast, when I name the subject of it, with acclamation;—it is the Chairman. (*Great cheering*). May I be permitted to say a word, not as to the honourable gentleman's personal character, for that would not be becoming in his presence, but to his merit in connexion with two noble individuals, in instituting and bringing forward this admirable Society? The very active and efficient part which the Chairman then took is well known, and with a mere allusion to it, I ask you to drink to his health and happiness. (*Great cheering*).

The Chairman: Twelve months have now elapsed since, by the too kind indulgence of the members of this Society, I was placed in the proud position I now occupy; but till this moment I never felt the labour of this position. (*Cheers*). If I fail, as fail I must (*No, No,*) in adequately expressing my thanks for the compliment you have paid to me, emanating, as it did, from such a source, and received as it has been by such a company, believe me, that it is not because I feel too little, but because I feel too much. (*Cheers*). Under the free institutions of this happy land, I know well there is no position short of the throne, that is not attainable by the humblest individual; I am not aware that there are many men who have not in their time aspired to reach some steps upon the ladder of ambition, to which their dreamy thoughts had been directed, but not in my most visionary dreams did I ever anticipate the honour I enjoy of presiding over a meeting like this, composed, as it is, of men with whom I feel a class interest—the farmers of England. (*Great cheering*). Happy will it be for me if I have no reason to believe that the interests of the Society have not suffered from my inefficiency. (*Cheers*). Our objects have been to promote enquiry, to promote knowledge, to sift if possible the worth and value of new projects, to commend those that are useful, and to discourage those that are visionary and impracticable; in a word, to combine the results of science with a practical knowledge of agriculture. (*Cheers.*) It here only remains for me to refer you to the pages of the journal which, under the able and indefatigable superintendence of our friend Mr. Pusey (*cheers*), has contained not only communications from practical men, but from men of science, of whom England has a right to be proud. I hope that no one has this day entered the show-yard of stock and implements who has not felt his ideas enlarged by the inspection. With reference to the latter, I may be permitted to observe that, by comparing the implements now exhibited with those produced some years ago, they are, I may say, in the relation of a well finished time-piece to a 5*l.* watch. (*Cheers.*)—I hope that no one has entered that show-yard without bringing away with him some information, or, what is of no less importance, leaving some prejudices behind him. (*Cheers.*) The Members of our Society now number more than 6,000. This I submit as evidence that my inefficiency has not operated unfavourably upon the number of members (*cheers*)—6,000 bent on improvement, and forming, as it were, one great experimental farm! I hope, sincerely, that a better system will be introduced into many districts, and as the means of effecting this, our great dependence is on the cultivators of the soil. There is yet another branch which I hope you will find beneficial to your interests, namely, the connexion which has been formed with the Veterinary College of England, from which we have derived, and are deriving most beneficial co-operation. Mr. Handley concluded by again expressing his acknowledgments for the honour which had been conferred upon him, and sat down amidst loud cheering.

Mr. Buck, M.P., said that he had the honour of proposing a toast which he was sure would meet with an enthusiastic reception; it was—"The Highland Society of Scotland." (*Cheers.*) The honourable gentleman passed a high eulogium upon the merits of the Highland Society, and referred to it as the parent of the Agricultural Society of England.

Mr. Smith, of Deanston, Scotland, in the absence of his Grace the Duke of Buccleuch, was called upon to return thanks. Mr. Smith said—"I assure you I rise with great pride, to return thanks for the honour you have conferred on me personally, by coupling my name with the Highland Society of Scotland. (*Cheers.*) Although I have been called upon rather unexpectedly, I hope I shall be enabled to convey those expressions of kindly feeling which I know to exist amongst the Members of the Highland Society of Scotland to their brethren of England. (*Cheers.*) I am proud, indeed, to hear it acknowledged to-day in this great and respectable assembly, that the Highland Society is considered to be the parent of the English Society. I can assure you that the members of the society with which I am connected, composed as it is of men who take an interest in agriculture, looked with much interest at the formation of your Society: they looked at it with the knowledge that they themselves had been benefited for the last 40 years through the instrumentality of their own institution. (*Cheers.*) We have the misfortune, if the expression may be allowed, to live to the northward of you. We have a worse climate and worse soil than you have; but by the exertions of the Society we have been stimulated to improvement, and I can assure you that some of the best agriculturists of England have been astonished at the progress we have made. (*Cheers*). You may from this judge with what interest we regarded the formation of the Agricultural Society of England. We knew the fair and fertile fields of England, and coupling these with the character of Englishmen, we anticipated that you would accomplish great results. There are periods in all states of society when a gloom will hang over them, and at present a gloom does hang over us. I speak not only as an agriculturist but as a manufacturer; and I say that the only legitimate source of relief must be looked for in the industry, the intelligence, the perseverance of the agriculturists of England. (*Cheers*). Now, I must tell you this, and you are no doubt pretty well aware of it, that in this kind of struggle every one must come forward; that the exertions of the landed proprietor or the farmer are not enough, but you must endeavour to stimulate the very hind to exertion. (*Cheers*). No means can be so effectual in the way of accomplishing as those you are adopting, namely, moving about from place to place with your annual exhibition. This has been well proved in the case of Scotland, where the annual shift of place has stimulated not only the nobleman, but the farmer, the ploughman and the boy. (*Cheers.*) In looking at the progress which your society has made, I begin to have some fear of your out-growing your parent. (*A laugh*). If you do I think it will be from the want of willingness on our own part. The period, now happily gone by, when the national spirit was called forth in the defence of our common country, must be revived, although its application is fortunately of a peaceful kind. The highest nobleman in the land, as well as the lowest person in it, must come forward with spirit and determination for our country's defence (*cheers*) now that we are engaged in a struggle, if I may so speak, with all the world. I trust that the same spirit that carried us through the former struggle will carry us through the present; and remembering the words of the immortal Nelson, and applying them to our present circumstances, I call upon you to respond to the sentiment, "England expects every man this day to do his duty." With the Royal Agricultural Society of England as your commander, I am satisfied that you will do your duty, and that promptly. (*Cheers.*)

Earl DUCIE.—As my noble friend, the Duke of Richmond, when he addressed you did so under the character of an English country gentleman, and as my Lord Portman, to my regret, spoke of himself as an infirm individual, I appear in a sort of intermediate position—as a plain Gloucestershire farmer. (*Cheers, and laughter*). I should not act in accordance with that character were I to detain you long, or say more than a very few words in proposing the toast I am about to give; but as a Gloucestershire farmer feels diffident in giving you his own thoughts, he thinks you will listen with attention to the words of his Excellency the American Ambassador, who proposed "Success to the Royal Agricultural Society of England." I regret that the rules of society requires us to call his Excellency an "Ambassador," for when we go home and speak of him to our families we adopt another language, and call him our eloquent, dear, and warm hearted brother. (*Cheers*). His Excellency did paint with warm colours, and with an eloquence, purity, and beauty peculiar to himself, the advantages that have and that will accrue from the Royal Agricultural Society of England. In connection with what he said, I have to state that our sister country, Ireland, has now formed an agricultural society, (*Great cheering*), and although that institution cannot be considered as affording an "example," still I call upon you to wish it success, and I have no doubt of that success when I see the noble Marquis (Downshire) taking so deep an interest in its success. (*Cheers*). I am sure it will succeed, because I know how much has been done in our society by the noble marquis, and I now beg leave to propose as a toast "Success to the Royal Agricultural Improvement Society of Ireland." (*Great cheering*).

Lord DOWNSHIRE.--I rise in pursuance with the wish of the Council to return you my best thanks for the distinguished honour you have conferred on the Royal Irish Agricultural Improvement Society, and at the same time to express my regret that there is no person present from the sister kingdom that offers himself better qualified than I am to reply to the compliment. But, in stating this, I beg to assure you that the absence of the distinguished persons who take a lively interest in the success of the institution has not arisen from want of interest, but they have been compelled to attend in their respective districts, the sessions now going on, and therefore their absence does not arise from apathy on their part. (*Cheers*). I am sure I only express their feelings when I state that I regret they had not the opportunity of witnessing the proceedings of this day. I heard in another hall yesterday expressions that did honour to the speaker, and much to his credit were repeated by him this day; and I am sure I do not speak in too warm terms when I say that every member who heard the minister for the United States speak of the ties of consanguinity, must hope that these ties may be drawn closer every year. I fully respond to the sentiment, and I heard it responded to by many beside me, and the inference I drew was that if such a feeling should be responded to as existing betwixt this society and America, how much more ought that feeling to be expressed in reference to our sister country, Ireland? (*Cheers*). His lordship proceeded to observe, that there was still a great want of information in England in reference to the people, the soil, and the condition of Ireland (*Hear*). He was sure the greatest benefit that could be conferred on that country would be a visit to it by the agriculturists of England; he was sure that great good would result from it (*Hear*). He was certain that it would draw the ties of good and right feeling between the two countries closer and closer. Every agriculturist who visited Ireland would find that there existed sources of great improvement of the soil, and that there might be drawn from the country profits which had been altogether and strangely overlooked (*Hear*). The object which was had in view by the noblemen and gentlemen, the proprietors and farmers who had established the Royal Agricultural Improvement Society of Ireland, was, to induce men of wealth and influence to form local associations in the different counties and parishes of that country: in short, to prevail upon those who had hitherto not taken part in agricultural pursuits to take an interest in them. He was happy to say that the society, though it had been in existence only for a short time (scarcely two years), had occasioned the establishment of a great number of local agricultural societies, and that men of influence and property had come forward, in a manner highly to their honour, to advance the benefit of the country. In mentioning this very gratifying fact, he should neglect his duty were he not to refer to his noble friend (Earl Fortesque) near his Royal Highness the Duke of Cambridge, who subscribed most liberally towards the funds of the Royal Agricultural Improvement Society at the time of its original establishment, and when that noble lord filled the highest situation in the government of the sister island. He had learned on the previous day, with much satisfaction, that the eminent agriculturist, Mr. Smith, of Deanston, would visit the next meeting of the society to which he (the Marquis of Downshire) had just alluded. He was sure, from the admirable lecture which that gentleman had delivered on the preceding day on drainage, that much good would result to Ireland from his visit (*Loud cheers*); for it was impossible to carry into effect Mr. Smith's plan of using the subsoil plough unless the land had been previously thoroughly drained (*Cheers*). Before he sat down they must permit him to say that he wished from the bottom of his heart that the English Agricultural Society might go on and prosper (*Cheers*).

The Duke of CAMBRIDGE—The toast I take the liberty of proposing is one which I am sure you will receive with pleasure. (*Cheers.*) In proposing the health of the worthy chairman, I spoke of him as one of the founders of this institution, in connexion with two noblemen. The health of one of these noblemen was drunk yesterday, not certainly in so numerous a company as this, but still in a large company; and I have now to propose the health of the other founder, Earl Spencer. (*Great cheering.*) I am sure you may well apply the term benefactor to the three founders of this institution. (*Continued cheering.*)

Earl SPENCER—When a person in my situation rises, he generally begins by saying that the honour was unexpected. I say so with most complete sincerity on the present occasion, because I was not aware that my health would be proposed, thinking that no toast but what appeared upon the printed list would be introduced; and little did I expect that I should have to return you my thanks for the high honour of having it proposed, and of having it drunk in so flattering a manner. (*Cheers.*) I beg to offer his royal highness my most sincere thanks for his kindness in making the proposition; because I will say to you, most truly, that it is to me a source of the greatest pleasure to feel that I am popular in such an assembly as this. (*Cheers.*) I have always wished to be popular with my fellow-countrymen in general; but there is one class with whom I like to be popular rather than another, because it is more gratifying to me, and it is that class to which I belong—the class of landed proprietors; and as the farmers of England, one of whom I am to a very large extent, are practical men, and as in this great assembly I have an opportunity of addressing them, my gratification is encreased. Agriculture is the great pursuit to which I apply myself. It constitutes the extent and occupation of my life, and when gratifying myself, I hope and trust I am doing some good to my country. This being my feelings, I need not say that having my health received as it was, has afforded me a satisfaction which it is far beyond my power to express. (*Cheers.*) I must attribute the compliment to the part I took in establishing this society. It is quite true that the Duke of Richmond, Mr. Handley, and myself, were the first who took up the subject. We took it up because we felt that such a society was wanted. We saw the advantages which the Highland Society of Scotland had produced. We thought there was no reason why a similar society, established in England, should not produce the same effects; and I am sanguinely convinced that such will be the case. (*Great cheering.* I see the exertions farmers are making; I mix a great deal with practical farmers, and am proud and happy in saying that many of them are my intimate friends. I see and hear what they see and hear; and I have to state that among many who have till lately taken no interest in agricultural improvement, there is a disposition manifested to investigate the different results which arise from different processes; and when this disposition is developed, there will be an accumulation of knowlege and of facts brought together by which the scientific man may apply his principles to the result of practical experience. Such being the case, I look back to the part I took in the establishment of this society with the greatest gratification, and I shall do so to the longest day of my life. (*Great cheering.*)

The Duke of BEAUFORT, in proposing the toast appropriated to his Grace, said that after the brilliant display of eloquence they had that day heard, he should have been reluctant to intrude upon them any remarks of his own, had he not been honoured by having entrusted to him a toast which he was certain would form a sufficient excuse for his addressing them. He need not assure any assembly of British farmers, that unless patronised by female smiles—(*laughter*)—he said unless patronised by female smiles—(*renewed laughter*)—they of the male sex might lose their ingenuity in inventing machines. (*Immense laughter, in which the Duke of Cambridge joined most heartily.*) He said that they of the male sex might lose their ingenuity in inventing machines to bring agriculture to perfection; but unless smiled on by the fair sex, he need not tell them that neither agriculture nor commerce could flourish. (*Laughter.*) He would not trespass longer on their time—(*laughter*)—but give the toast to which he knew they would respond—"The Ladies of Bristol." (*Cheers.*)

The CHAIRMAN:—The last toast is that of the noble lord into whose hands I resign the duties which thus far I have so imperfectly performed—"The Earl of Hardwicke," who, had he been here, and attached as he is to agriculture, would have addressed you, I am sure, in a manner which must have afforded you much gratification; but he is at this moment paying his respects to the King of Prussia, whom we so lately rejoiced to receive in our isle. (*Cheers*). I need scarcely tell you that the noble Earl is ably represented upon this occasion by my old and valued friend Mr. Wm. Miles. (*Great cheering.*) And if any circumstance could be more gratifying to me than another, it was that my friend in boyhood and in maturer years should be my colleague upon this occasion. In Lord Hardwicke you see one not less anxious for the prosperity of the Society than I am—(*cheers*)—one who is admired as a neighbour and a friend, and one who enjoys the confidence of a very large portion of the surrounding district. (*Cheers.*) The chairman then gave—"The Earl of Hardwicke," who is respresented upon this occasion by Mr. W. Miles. (*Cheers.*)

W. MILES, Esq., M.P., returned thanks, but owing to his distance from the reporters' table, he was but imperfectly heard. He could not at the present moment but deplore the absence of the Earl of Hardwicke, for he felt that he could not do justice to the way in which that nobleman would have expressed himself for the kind manner in which the collected landlords and farmers of England had received his name as the President elect. He felt and deplored his absence, inasmuch as Lord Hardwicke could have addressed them more ably and with much more effect than he could possibly do. In answer to the compliment which had been paid to him by his excellent friend, who, during the last year, had filled the chair of that society with so much advantage to them and credit to himself, he could say with truth that he was proud to see Mr. Handley in his native city—he was proud to see the friend of his youth and the esteemed friend of his riper years now filling the distinguished station of President of that great Association. (*Cheers.*) Unfortunately for him, as far as related to any observations they might expect from him, the ground had been completely cut from under him by the preceding speakers. For who, after having heard the very eloquent speeches which had been addressed to them that evening, could expect from him any thing that would add to the information they had derived or the entertainment they had received. But he might be permitted to say to those noble hands who had forwarded this society, that the seed which they had set in the earth had only sprung up, and that they could look to this meeting, as well as those at which they hitherto been present, with proud satisfaction at their progressive increase, and with perfect assurance that the public of England responded to what they had done for the benefit of agriculture. This, however, the meeting would permit him to say, though much had been done, much still remained to be done. Great improvemennt had already been effected, but more was required. Industry was required, and the greatest perseverance, to bring to maturity the good seed which had been sown. They had for their encouragement that the soil was good. Let them pay, then, the utmost attention to practical agriculture, combined with science; for he really believed that under the present system they had not an idea of what mother Earth would produce, or what abundant treasures were yet concealed within her bosom. He saw immediately before him men of science, who devoted their time entirely to scientific attainments. These were united with them in their pursuits, and with such assistance, combined with their own exertions, how could they fail to prosper? Depend upon it they knew not the fertility of the earth at present, and he agreed with his hon. friend, the member for North Devon, that by including the aids of science with practical improvement, they would yet be able by their industry to wring from the earth greatly increased crops, and England would yet find an abundant supply for her children in her own bosom. He felt highly gratified that the Royal Agricultural Society had chosen Bristol as the place of the meeting on the present occasion; for though they had around them a fertile soil, yet he would particularly call the attention of those of his friends who lived immediately around him to the advantages which had been reaped in Scotland from the application of science; and he had no doubt the stimulus of this great meeting would prove useful to them, for he was sorry to say that it was not from the most fertile lands that improvement generally sprung up, whilst, where the soil and climate were less propitious, the exertions of art were called upon to supply the abundance which nature had not voluntarily yielded. If so much could be done where the soil was so unfavourable, what could they not accomplish, by similar exertions, who lived in a rich and fertile country? (*Cheers.*) Let them, then, run the race of improvement with their northern brethren, and by so doing they would fulfil most completely the hopes and conditions of this society, which had for its object the whole of the united classes of England; and above all, the whole united classes of agriculturists, landlords, tenants, and labourers. (*Loud cheers.*) The welfare of the labouring classes was an object dear to them all (*hear*), and he would venture to say that the noble duke who had so eloquently advocated their cause, could nowhere have found his sentiments more warmly responded to than they had been at that meeting (*loud cheers*); and he was happy to inform them that a gentleman who was present at their dinner yesterday, and who had not previously joined the society, was so struck with the importance of the object they had in view, that he immediately placed 10*l*. in the hands of the council, to be appropriated to that society which gave the largest premiums to agricultural labourers. (*Cheers.*) Allusion had been made to the Irish Society, the meeting of which would shortly take place at Cork, and they would be glad to hear that the Irish Society had, with great liberality, determined to throw open their doors to all the members of the English Society who would honour them with a visit on that occasion. (*Cheers.*) He would detain them no longer, but conclude by returning his sincere thanks for the honour conferred on him, and by expressing his conviction that the society would reap much advantage from the presidency of his noble friend the Earl of Hardwicke, to whom they had paid so gratifying a tribute of respect.

This closed the proceedings of the evening.

THE GENERAL MEETING—FRIDAY.

The general meeting of the members of the Society, held pursuant to the Charter, took place on Friday at twelve o'clock, at the Victoria Rooms, and was but thinly attended, owing to the interest excited by the sale of cattle, sheep, horses, and pigs then going on in the yard by Mr. Wetherell, of Durham, the auctioneer specially appointed by the Society.

The chair was taken by the president, Mr. HANDLEY, who said they had met together in pursuance of the charter, and the object of the meeting was for him to inform them that the exhibition had terminated, and that he should be happy to hear any observations which the members of the Society might wish to make.

Earl SPENCER then said—He was sure the proposition which he should have the honour of reading to them was one in which they would most cordially concur. They had been received by the constituted authorities of the city in the most kind manner possible, more especially by the Mayor of Bristol, who had received and entertained in his hospitable hall a very large party of those who had come down for the purpose of the meeting (*applause*). He had done everything he could do for them, and he came forward to give them every assistance in his power; with respect to the other authorities of Bristol, they had done what they could to accommodate them, and he thought that the members of the Society would esteem it to be a pleasing duty to give thanks where they were due. He begged to move the thanks of the Royal Agricultural Society of England to the Mayor, High Sheriff, and Corporation of Bristol.

The motion, having been seconded, was unanimously adopted.

Lord PORTMAN said he had to offer them a resolution very similar in its nature. The parties to whom it referred had done all they could do for the accommodation and comfort of the members of the Society, and were entitled to its thanks. He begged to move that a vote of thanks be passed to the proprietors of the Victoria Rooms, Bristol Institution, Commercial Rooms, Great Western Steam-ship and Great Western Railway Companies, and to all the other companies and the other institutions which had so kindly paid atention to the Society.

Mr. PORTER, of Hembury Fort, Honiton, said, he approved of the resolution generally, but objected to the vote of thanks to the Great Western Railway company, who had not, on the Taunton branch, acted quite fairly towards gentlemen who had sent cattle to the show. They had charged double the ordinary price for stock—from London they had charged 50s., when they used to charge 30s.; and from Taunton 20s., when the usual charge is 10s. (*Hear.*)

The CHAIRMAN said—Perhaps the hon. gent. would allow him to say that the matter had been brought before the council, in the case of Mr. Shelly, who had sent a bull. It had been named to Mr. Saunders, Secretary, who was of opinion that it had originated in some error in giving directions, or in some misunderstanding of them. He (the President) would take an opportunity of communicating with the board, and if they adopted the view of it which he took, they would take means to satisfy the complaint which had been so justly made. (*Hear.*) He ought to observe, that one reason for proposing thanks to the company was, that they had handsomely offered rooms and ground, but which were not deemed so eligible as those selected, for the gratuitous use of the society.

The resolution having been adopted,

E. DAVID, Esq., of Radyr Court, near Cardiff, trusted that he should not be out of order in calling the attention of the society to the expediency of offering prizes for the best dairy cattle. He was aware that the list of prizes for the next year had already been arranged, and he merely now availed himself of this opportunity of mentioning the subject, hoping that, at the proper time, the council would take it into their consideration. It was well known to them that a large portion of the country was better calculated for dairy stock than for feeding, and it should, therefore, be also encouraged.

Earl SPENCER said, at the first show at Oxford, they had given a prize of the description referred to, but the experience derived from the stock there shown in competition had induced the council to think that it was not desirable to continue it. Gentlemen must be aware that whether a cow was a good milker or not, was not the only question to be considered in estimating the merits of dairy stock; it was necessary, also, to consider whether they could be fed when they had become dry. The judges had experienced great difficulty on this account, as some good milkers had been exhibited, but in such wretched condition as to lead to no expectation that they would ever fatten; others, again, were in good condition, but, perhaps, not quite such good milkers. He (Earl Spencer) would again bring the matter under the consideration of the council.

Mr. PORTER suggested whether it would not be desirable to encourage certain breeds of dairy stock? He knew that Sir Charles Morgan, at his exhibition, gave a premium for the best Ayrshire dairy cow.

Mr. STUCKEY observed that they gave premiums for dairy stock at some of the country meetings. He himself gave 1*l.* at a society with which he was connected.

The CHAIRMAN observed that perhaps the gentleman would be satisfied with Lord Spencer's promise to bring the matter before the council, and the conversation dropped.

Mr. JOHN BLEEK, of Warminster, said it appeared to him that they were about to separate without discharging their duty by thanking their chairman (*Hear.*) He regretted that some gentleman of greater talent had not brought forward the resolution, but he was sure that the kind, able, and judicious conduct of their chairman entitled him to their warmest thanks. Mr. B. concluded, by proposing a resolution of thanks, which was seconded by Mr. Stuckey, and carried by acclamation.

The CHAIRMAN said he was deeply indebted to them for the manner in which they had received the kind observations which the gentleman had been pleased to make. As he had said last night, with great sincerity, he had never expected that an humble individual like himself would have had the honour of being elected President of that great society. If his humble endeavours had given satisfaction he was amply repaid. It now only remained for him to resign the presidency into the hands of his successor (the Earl of Hardwicke), who, unfortunately, was unable to attend, being on a visit to the King of Prussia. He begged, in conclusion, to assure them that, in returning into the station of a private member, he should still do all in his power to forward the interests of the society.

The meeting then broke up.

ANALYSIS OF PRIZES FOR STOCK OBTAINED BY DIFFERENT COUNTIES.

	£.
BEDFORDSHIRE.	
Shearling ram (Leicester breed)	30
Shearling ram (Leicester breed)	15
Ram of any age	30
Ram of any age	15
Wheel Plough	5
Turnip cutter	5
Six prizes	100
BERKSHIRE.	
Ram of any age	15
Horse work for thrashing machines	5
Two prizes	20
CAMBRIDGESHIRE.	
Shearling ram	15
Ram of any age	30
Pen of five shearling ewes	10
Two South Down rams, commended.	
Three prizes	55
DEVONSHIRE.	
Devon cow in milk	15
Devon heifer in calf	15
Devon yearling heifer	10
Three prizes	40
DORSETSHIRE.	
Calf	2
ESSEX.	
Boar	5
Three breeding sows	10
Two prizes	15
GLOUCESTERSHIRE.	
Cross-bred heifer, in calf	15
Cart mare and foal	20
Long-woolled ram	30
Swing plough	5
Four prizes	70
HEREFORDSHIRE.	
Hereford bull	30
Hereford cow in milk	15
Hereford heifer in calf	15
Hereford yearling heifer	5
Four prizes	65

HUNTINGDONSHIRE.

Cart stallion	15
Two years old filly	10
Two prizes	25

KENT.

Improved mode of working a hand thrashing machine	5

LANCASHIRE.

Short-horned bull	15
Heifer in calf	15
Boar	15
Breeding sow	10
Chaff-cutter	3
Five prizes	58

LEICESTERSHIRE.

Cross-bred bull	20
Cross-bred yearling heifer	10
Subsoil plough	15
Three prizes	45

LINCOLNSHIRE.

Improved mode of distributing manure and soot by drilling machines	5
Drill for corn and general purposes	30
Horse rake	5
Three prizes	40

NOTTINGHAMSHIRE.

Short-horned bull	30

OXFORDSHIRE.

Long-woolled shearling ram	30
Long-woolled shearling ram	15
Long-woolled ram of any age	15
Pen of shearling ewes	10
Pen of shearling ewes	5
Cart mare and foal	10
Long woolled shearling ram commended.	
Liquid manure depositor	3
Seven prizes	88

SOMERSETSHIRE.

Short-horned bull	20
Devon bull	30
Devon bull	15
Devon bull	20
Cross-bred bull	30
Cart stallion	20
Devon ox commended.	
Turnip and chaff cutter combined	3
Crosslock waggon and general exhibition of carts and waggons	10
Cheese presser	5
Haymaking machine	10
Cart with self-acting brakes	5
Somerset cheese	10
Somerset cheese	5
Thirteen prizes	183

SUFFOLK.

Turnip and manure drill	20
Horse hoe	10
Cake crusher	5
An application of locomotive steam power to agricultural purposes	30
Four prizes	65

SUSSEX.

Cross-bred bull	15
Shearling ram (South Down)	30
Bull of any breed, commended.	
Cow of any breed, commended.	
Two prizes	45

WARWICKSHIRE.

Corn grinding and dressing-mill	5

WILTSHIRE.

Cross-bred cow in milk	15
Cart stallion	30
Thorough-bred stallion	30
Pen of shearling ewes	5
Short horn ox, commended.	
An application of locomotive steam power to agricultural purposes	15
Five prizes	95

WESTMORELAND.

Sizerk boar	1
Sizerk sow	1
Two prizes	2

WORCESTERSHIRE.

Hereford bull	15
Hereford bull	20
Hereford yearling heifer	10
Three prizes	45

YORKSHIRE.

Cow in milk	15
Yearling heifer	15
Potato steamer	2
Grass cultivator	5
Soot and lime depositor	3
Five prizes	40

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a Council held on Wednesday, the 22nd of June,—present, His Grace the Duke of Richmond, K.G., in the chair; Marquis of Downshire, K.P.; Earl of Euston; Earl of Aylesford; Earl of Lovelace; D. Barclay, Esq., M.P.; T. Raymond Barker, Esq.; H. Boys, Esq.; F. Burke, Esq.; Colonel Challoner; J. Dean, Esq.; H. Gibbs, Esq.; Sir J. B. V. Johnstone, Bart.; Sir F. Lawley, Bart.; Sir C. Lemon, Bart., M.P.; W. Miles, Esq., M.P.; A. H. Montgomery, Esq.; E. S. C. Pole, Esq.; W. Shaw, Esq.; R. A. Slaney, Esq.; T. H. E. Sotherton, Esq., M.P.; P. Pusey, Esq., M.P.; V. Stuckey, Esq.; and Sir Offley Wakeman, Bart.

The Mayor of Bristol addressed to the Council an invitation to dinner at the Council House, Bristol, on Tuesday, the 12th of July, which was received with the best thanks of the Council, and immediately accepted.

Mr. Slaney read an account from Mr. Ford, of Nine Elms, of Mr. Irving's new Tiles for Draining. Mr. Bullen, Secretary of the Royal Agricultural Improvement Society of Ireland, transmitted a letter on the subject of Judges of Stock for the meeting at Cork; Mr. Stott communicated the ingredients of his proposed new saline manure; Mr. W. Townsend, a paper on destroying the wire-worm; Mr. Morton, a letter in reference to the Lectures at Bristol; Mr. Sholl, a paper on hiving bees; and Mr. Coote, on Ray Grass.

The Duke of Richmond presented a copy of the Labourer's Premium Certificate of the East Sussex Agricultural Association, framed in oak, and varnished, as presented to the meritorious candidates; Mr. Shaw, a copy of Mr. West's Remarks on the Turnip Question, and on the use of the Subsoil Plough for turnip culture; Mr. Revis, the first Annual Report of the Leominster Farmer's Club; and Mr. Evans, the fifth Number of the British American Cultivator, from Canada.

The Council ordered that an impression of 3,000 copies of Mr. Burke's compilation on Cottage Economy and Cookery should be reprinted from the Journal for distribution among cottagers, and be supplied to Members (on application) at one penny each copy; also a second impression of 3,000 copies of Main's Paper on Cottage Gardening, for the same purpose, and at the same price, the former impression having been nearly distributed.

The Governors of the Veterinary College, at the recommendation of Professor Sewell, have recently appointed an additional Lecturer on Cattle Pathology, in order to give that gentleman, who has so long and faithfully devoted his energies to the cause of the institution, sufficient leisure to retire for the Session for the purpose of recruiting his impaired health, and arresting by timely suspension of his arduous duties the progress of serious injury already sustained by his constitution. This recommendation of Professor Sewell having been adopted at the Annual Meeting of the Governors of the College held on the 30th of May, advertisements were ordered to be inserted in the daily and other papers for candidates to produce testimonials to be submitted to a Committee appointed to receive and report upon their comparative merits. That having held a meeting on Thursday last, and taken the whole of the various letters and testimonials submitted on behalf of the candidates for the office in question, unanimously decided in favour of the claims of Mr. James B. Simmonds, veterinary surgeon, of Twickenham; and that gentleman having been duly appointed, he will commence his new duties, as assistant professor at the Veterinary College, immediately after disposing of his professional business and making the arrangements for his lectures. Professor Sewell having had a personal and uninterrupted acquaintance with Mr. Simmonds since the time of his quitting the college in 1829, and entertaining a high regard for his general and professional character, has expressed his assurance that this appointment will give satisfaction to the public and the members of the Veterinary College, and promote essentially the great object of a progressive and more exact and extensive knowedge of the diseases of domestic animals generally.

The Council then adjourned to Wednesday next.

At a Council held in Hanover-square, on Wednesday, the 29th of June, present, Henry Handley, Esq., President, in the Chair, Duke of Richmond, Earl of Euston, Earl of Aylesford, Earl of Ducie, Colonel Austen, John Benett, Esq., M.P., Edward Buller, Esq., M.P., French Burke, Esq., Hon. Robert H. Clive, M.P., Colonel Challoner, J. Walbanke Childers, Esb., M.P., James Dean, Esq., John Ellman, Esq., S. Grantham, Esq., W. F. Hobbs, Esq., Sir John V. B. Johnstone, Bart., M.P., S. Jonas, Esq., G. Kimberley, Esq., J. Kinder, Esq., Sir Francis Lawley, Bart., William Miles, Esq., M.P., Philip Pusey, Esq., M.P., William Shaw, Esq., J. Villiers Shelley, Esq., W. R. C. Stansfield, Esq., M.P., and Vincent Stuckey, Esq.

The Council having decided finally on the Prize Sheet for next year at the Meeting at Derby, and resolved that, in future, all certificates and entries should be delivered by the 1st of June, the President called their attention to the appointment of Judges for the Show at Bristol, when all the Members of the Council present who intended to be competitors and exhibitors on that occasion having left the Board Room, the remaining Members proceeded to nominate the Judges required for the particular departments of the Exhibition.

Professor Royle placed at the disposal of the Council a supply of the Khelat Lucerne Seed; William Vaughan, Esq. transmitted a packet of wheat from the Sandwich Islands, the produce of seed left there by Vancouver; George Pryme, Esq., M.P., sent half a bushel of a new kind of Cole or Rape Seed; and the Proprietors of Bell's Weekly Messenger presented a collection of the scarce numbers of that Journal, to complete the Society's copy; for all of which the Council voted their best thanks. The Report of the Bristol Committee, and a communication from Professor Sewell in reference to a lecture at the Meeting at Bristol having been read, the Council adjourned to Wednesday next, the 6th of July.

NEW MEMBERS.

The following gentlemen have been elected members of the Society during the month.

His Grace the Duke of Bedford, of Woburn Abbey, Bedfordshire; the Earl of Powis, of Powis Castle, Montgomeryshire; A. H. Montgomery, Esq., of Tyrella House, Clough, Downshire; and O. Ricardo, Esq., of Broomsberrow, near Tewkesbury, Gloucester, were elected Governors.

E. Digby, Minterne House, Dorchester; Rev. E. Higgins, Bosbury House, Ledbury; A. G. Lethbridge, Sandhill Park, Taunton; Lord Stavordale, Melbury, Dorchester; Lieut.-Colonel Porter, Minterne House, Dorchester; G. Milward, the Manor House, Lechlade; J. Tomlinson, Laverock Bank, Liverpool; O. Roberts, Dinas, Carnarvon; R. A. Mansel, Heathfield, Swansea; D. Williams, Newton, Brecon; L. Hughes, Rhidywernon, Brecon; J. Wood, Croham Farm, Croydon; J. Fielding, Denbigh House, Haslemere; J. Stacy, Shippon, Abingdon; J. Williams, North Court, Abingdon; J. Gray, Wooperton House, Wooler; Rev. J. Higgins, Bosbury, Ledbury; T. G. Matthews, Bristol; R. Jenner, Wenvoe Castle, Cardiff; C. Devon, Teddington, Middlesex; J. D. Howell, Stow, Monmouth; C. H. Webber, Buckland, Barnstaple; J. B. Stanhope, Rereshy Abbey, Horncastle; H. Walters, Bath; Rev. W. W. Gale, Pylle Rectory, Shepton-Mallet; J. L. Lovibond, Load Bridge, Langport; J. Culverwell, Clanelshay Farm, North Petherton; Rev. A. Morgan, Nantesderni, Ragland, Monmouthshire; S. Brown, Bristol; J. Bland, Bristol; W. H. Townsend, Bristol; John Stone, Bristol; S. Down, Weston-super-Mare; E. Wait, Bristol; J. Smith, Redland, Bristol; J. Morcom, Bristol; W. Fedden, Bristol; A. Fairbrother, M.D., Clifton; Rev. J. W. Jones, Winterbourne, Bristol; C. Bush, Bitton, Bristol; J. James, Wrington, Somerset; W. L. Clark, Clifton; C. S. Clark, Clifton; J. Hurle, Clifton; W. Mallard, Bristol; J. Pring, Bristol; J. Fargus, Bristol; J. Jeffery, Bristol; W. Jeffery, Bristol; S. Whittock, Hanham Hall, Bristol; E. H. West, Stoke-Bishop, Bristol; J. Bucknall, Bristol; G. G. Bompus, M.D., Fishponds, Bristol; H. Halsey, Henley Park, Guildford; J. Watts, Hythe; E. Jones (Clerk of the Peace), Velindre, Llandovery, Carmarthenshire; A. Coles, Snelsmore, Newbury, Berks; P. Richardson, Horkston, Barton-upon-Humber; L. Alexander, Foyle Park, Londonderry; G. Ashlin, 50, Mark Lane, London; J. Garrard, Pinner's Hall, Watford; T. F. Wilson, Althom Hall, Maldon; W. Rolph, Thornbury; R. M. Biddulph (Lord Lieutenant of the County of Denbigh); Rev. S. Heathcote, Bramshaw Hill, Stony Cross, Southampton; H. Putland, Hurstgreen, Sussex; A. Stratton, Rushall, Pewsey; C. H. Russell, Cheltenham; H. F. Fardon, The Firs, Broom-grove; J. Read, Regent Circus, Piccadilly; T. R. Sanders, Bristol; R. P. King, Bristol; G. B. Northcote, Axbridge; J. Sherring, Milborne, Somerset; Edward Sherring, Milborne; and John Parkinson, 66, Lincoln's Inn Fields, London; W. Williams, Aberpergwn, Glamorganshire; P. Vaughan, Brecon, S. W.; J. Bowen, Troedgraur, Newcastle Emlyn, S.W.; D. Burges (Town Clerk of Bristol), Brislington, Bristol; J. Cookson, Clifton, Bristol; Mrs. S. Coote, Mornington House, Richmond Hill, Clifton, Bristol; R. Poole, Bridgwater, Somersetshire; G. Poole, Bridgwater, Somersetshire; J. Austice, Madeley Wood, Shropshire; H. D. Munro, Druidstoke, Bristol; E. Wansey, Sutton Very, Warminster, Wilts; J. Cockburn, Havyat Lodge, Bristol; J. F. Reeves, Taunton, Somersetshire; J. Bennett, Bishopstrow, Warminster, Wilts; T. R. Guppy, Bristol; J. Franklyn, Bristol; M. Perkins, Bristol; J. H. Wyld, Bristol; W. H. Wyld, Bristol; W. Hollyman, Clevedon, Bristol; I. Riddle, Bristol; J. Winwood, Clifton, Bristol; J. Beech, 15, Grosvenor Place, and Brandon Lodge, Coventry; W. Hodgson, Bowness, Cumberland; the Rev. W. B. Kempson, Stoke Lacey, Bromyard, Herefordshire; J. Bayly, Hill House, near Bristol; Rev. H. P. Hope, Hutton, near Weston-super-Mare; J. S. Somerville, Dinder House, Wells; J. Somerville, Jun., Dinder House, Wells; T. Bowman, Stoke Bishop, Bristol; W. Gaisford, (solicitor), Berkeley, Gloucestershire; Rev. C. Wrottesley, Knoyle, near Hendon; the Hon. Col. C. Wrottesley, Wrottesley, near Wolverhampton; H. H. Fox, 25, Berkeley-square, Bristol; J. Meats, Bridge, Wellington, near Hereford; Colonel Master, Knole Park, near Bristol; E. Newman, Yeovil, Somersetshire; B. Wake, M.D., Castle Carey, Somersetshire; J. Cann, Bruton, Somersetshire; W. H. Biggs, Chesham, Bucks; G. Jesty, Druce Farm, Eveshot, Dorsetshire; H. D. Harvey, Wivelscombe; J. Keats, Wivelscombe; J. Pell, Chittiscombe, Tiverton; Rev. A. Huxtable, Sutton, Blandford; J. G. Wilson, jun., Dalham Tower, Milnthorpe, Westmoreland; W. Fox, Elfordleigh, Plympton St. Mary, Devon; G. Strode, Newnham Park, Plympton St. Mary, Devon; R. Bright, Leigh, Bristol; Dr. Riley, Clifton, Bristol; C. Castle, Clifton, Bristol; T. Cole, Clifton, Bristol; Rev. J. Poole, Enmore, Bridgwater; G. J. Sulivan, Wilbury Park, Amesbury, Wilts; J. G. Cotham, Bristol; J. Archer, Castle Eaton, near Fairford; J. Atkinson, Milbourne, Penrith, Cumberland; T. H. Layton, Mangotsfield, Gloucestershire; R. B. Orton, Bank House, Tattenhall, Chester; T. Goodman, Warminster, Wilts; W. Chambers, jun., Llanelly House, Llanelly, Carmarthenshire; W. H. Poole, Terrick Hall, near Whitchurch, Salop; B. Pulver, Burton Latimer, near Kettering, Northamptonshire; E. Sealy, Bridgwater; J. L. Sealy, Bridgwater; J. Adams, Bristol; T. C. Hooper, 22, Cornwallis Crescent, Clifton, Bristol; W. Coates, Wrington, Somerset; W. R. Mogg, Cholwell Farm, Temple Cloud, near Bristol; J. B. Nurse, Barbadoes; C. B. Hare, 9, Saville-place, Clifton; Dr. Budd, 22, Park-street, Bristol; T. P. Wright, Stackeridge, near Bampton, Devon; E. Sherring, Melbourne Wick; J. Sherring, Melbourne Wick; Rev. W. Gale, Pill, near Bristol; J. Carey, Pill, near Bristol; J. Poole, jun., Clifton; J. N. Sanders, Clifton; J. Bleeck, Warminster, Wilts; J. W. Danberry, Belluton, Pensford, near Bristol; M. Maw, Cleatham, Kirton-in-Lindsey, Lincolnshire; J. A. Gordon, Naish, Somerset; C. Gordon, Wiscombe Park, Honiton; E. H. Anthony, The Moat, Much Hadham, Herts; A. H. Montgomery, Tysilla House, Clough, County of Down, Ireland; J. Morris, Cone Mill, Alvington, Chepstow; R. Parker, Belle Vue, Castle Hill, Devon; C. Morgan, Llanrhidian Gower, Swansea, Glamorganshire; E. M. Gole, Upham, near Bishop's Waltham; M. Sayre, Kington, Herefordshire; J. Codham, Clifton; E. Smith, Charbury, Oxon; Colonel Mc Cloud, (2nd Life Guards); J. Carrington, Croxden, near Uttoxeter, Staffordshire; W. Palmer, Bollitree, near Ross, Herefordshire; W. Palmer, jun., Bollitree, near Ross, Herefordshire; G. Palmer, Bollitree, near Ross, Herefordshire; J. Scobell, Usticke, Mintvale House; M. Hodding, Frym Court, Salisbury; Sir J. Duntz, Bart., Starcross, Devon; R. Clark, Tiverton; C. Eales, Bristol; J. W. King, Chilten Polden, near Bridgewater, Somersetshire; Rev. H. S. Roper, Royal Fort, Bristol; H. G. Langton, 5, Lower Crescent, Clifton; H. T. Bridge,20, Berkeley-square, Bristol; J. Shorland, jun., Dundy Grove, near Bristol; J. Walker, Holmer, near Hereford; W. Claxton, Bristol; E. Clark, Bristol; F. Edwards, Bristol; J. D. Colston, Whitchurch, near Bristol; J. Fisher, Langford, near Bristol; H. Myers, Laurence Weston, near Bristol; W. Cave, Henbury, near Bristol; J. H. Battersby, Stoke Park, near Bristol; W. Cosens, Langdon, Dawlish, Devon; C. Kynaston, Caldy Island, Tenby; G. Bingley, Clifton; G. Cotton, Barnstaple, Devon; C. W. Loscombe, jun., 8, Prince's Buildings, Clifton; J. Stephens, Meridian-place, Clifton; E. Sampson, jun., Henbury; J. Hearsley, Bath Hotel, Clifton; J. Pope, St. Michael's Hill, Bristol; V. T. Langworthy, Ilminster, Somerset; R. Hunt, 5, Berkeley-square, Bristol; J. S. Bramhall, Sneed Park Farm, near Bristol; T. Castle, Worle, Weston-super-Mare, Bristol; J. Hayward, Brow Fort House, Devizes; H. Dod, The Colony, Burnham, Somerset; Sir J. Mansell, Bart., Llanstephen Cottage, near Carmarthen; W. B. Gwyn, Pilroath, near Carmarthen; L. Morris, Mount Pleasant, near Carmarthen; G. Davies, Pibur Wen, near Carmarthen; W. Evans, Guildhall-square, Carmarthen; T. Richards, The Bank, Carmarthen; N. V. E. Vaughan, Rheslas, near Neath, Glamorganshire; W. P. James, Plantglass Trellock, Monmouthshire; F. Holland, Copthorne-court, Worcestershire; C. Helyar, Pitminster, near Taunton, Somersetshire; Lieutenant-Colonel G. Caffin, Laneford, Wilts; J. Bell, Brickworth, Ramsey, Hunts; J. Whiteman, Rudham Grange, Rougham, Norfolk; Sir G. Sitwell, Renisham, Chesterfield; C. Blakeway, Shelderton, Ludlow; Lord C. Beauclerk, 16, King-street, St. James's; — Puller, Esq., Youngsbury, Ware, Herts; J. Nash, Chesham, Bucks; T. Eaton, Haverfordwest, Pembrokeshire; E. Chadwick, 4, Stanhope-street, Hyde-park, London; B. Turner, Wantage, Berks; R. M. King, Pyrland Hall, Taunton, Somersetshire; C. Williams, 7, Colston's Buildings, St. Michael's Hill, Bristol; S. P. Jackson, 12, Redcliffe-street, Bristol; E. Thomas, Bristol; H. Paramore, Park, North Pitherton, near Bridgewater; E. Jones, 19, College Green, Bristol; G. Lax, Wells, Somerset; J. J. Rock, Glastonbury, Somerset; E. J. Esdaile, Cothelstone House, near Taunton, Somerset; Rev. W. W. Malet, Bishport Lodge, near Bristol; W. F. Mogg, West Park, Bristol; W. Morgan, 38, Princes-street, Bristol; J. J. Mogg, West Park, Bristol; T. Reynolds, 17, Catherine-place, Stokes' Cross, Bristol; H. Visger, Bristol; F. Rickett's, North Cote, near Bristol; W. P. Gillard, Oakhill, Somerset; P. Bower, Long Ashton, near Bristol; H. A. Sheppard, Keyford House, Frome; P. Maze, Jun., Berkeley-square, Bristol; C. G. Ashley, Butcombe Court, near Wrington, Bristol; T. James, Westerleigh, Bristol; D. H. Ward, College Green, Bristol; R. Donovon, Ballymore, county of Wexford; W. B. Canning, Ramsbury Park Farm, near Marlborough; T. Fuidge, jun., Bristol; W. Maule, Bristol; J. Hall, Kingsdown, Bristol; J. Garaway, Durdham Down, Bristol; T. M. D. Green, 19, Queen-square, Bristol; J. H. Shire, Clifton; J. Grazebrook, 2, Park-row, Bristol; G. Blake, Plumstead, Blofield, Norwich; R. H. Moxhay, Wonford, Exeter; J. M. Gutch, Worcester; J. Marton, Bristol; E. Cockey, Frome, Somerset; T. Latimer, Exeter; Rev. J. Traherne, Coedriglan, near Cardiff, Glamorganshire; F. Tuckett, Trenchay, near Bristol; G. L. Stott, Cheltenham-road, Bristol; T. R. Williams, Newport, Monmouthshire; R. R. Talbot, Wickford, Essex; H. Bennett, Rock Cottage, Bedminster, Bristol; T. Lax, Wells, Somerset; R. Phipper, Northover, Glastonbury, Somerset; T. Bath, Northover, Glastonbury, Somerset; J. Freer, M.D., Oakford House, Exeter; W. T. Pettit, Winston Hall, near Debenham, Suffolk; G. Moore, Appleby Hall, Ashby-de-la-Zouch; T. W. Edge, Streller's Hall, Nottingham; E. A. Holden, Aston Hall, Derby; J. Moore, Appleby, Ashby-de-la-Zouch; T. Moore, Ruddington, Nottingham; T. Osler (Sec. of the Great Western Railway), Bristol; J. B. Cross, Bristol; J.

Whitney, Westbury, Bristol; R. F. Hayward, Deene, Wansford, Northamtonshire; Dr. Dunn, Smethwick, Birmingham; W. Sanders, Bristol; J. Whitworth, Manchester; R. Strachey, Ashwick Grove, Oakhill, Somerset; W. G. Goddard, Pentridge, Woodgates, Dorset; J. Harvey, Hemsworth, Wimborne, Dorset; J. P. D. Winton, Maesderwen, Brecon, S. W.; H. Chamberlain, Bredicot Court, near Worcester; F. Henckman, Kew; T. Bullock, St. Briavel's, near Chepstow; C. H. Powell, Monmouth; Rev. J. Heyworth, Shirley, near Southampton; A. Short, Exchange, Bristol; the Right Hon. Earl Cowper, Panshanger, Herts; J. Howard, Oswestry, Salop; A. O. Barker, Stourhead, Wilts; C. Gordon, Wiskcombe House, near Honiton, Devon; J. Horsburg, Herne Hill, near Dulwich, Surrey; J. Pantin, Westcote Rectory, Low-on-Wold, Gloucestershire; G. Thomas, Llysnewydd, near Carmarthen; T. Pocock, Grittleton, Chippenham; E. Anthony, Haddham, Ware, Herts; S. M. Talbot, 16, Upper Seymour-street, West, Connaught-square; T. Lovell, Winwick Warren, Daventry, Northamptonshire; T. Lovell, jun., Winwick Warren, Daventry, Northamptonshire; T. Lewis, Norchard, near Tenby, Pembrokeshire; R. Waters, Penelly Court, near Tenby, Pembrokeshire; Rev. R. Smith, Arlsey, near Hitchin, Herts; W. T. Hayward, Carshalton, Surrey; J. Boucher, Shidfield, Wickham, Hants; T. Russell, Croydon, Surrey; R. Learby, Croft, near Wainfleet; J. Clay, Bardney, near Lincoln; C. Stile, Strubby, near Alford; J. N. Carpenter, Endisland, near Leominster; C. de la Barr Bodlaham, Rotherham, near Hereford; H. Cooper, Euston, Thetford; J. Tench, land-agent, Ludlow; J. Onions, Broseley, Salop; S. H. Ashdown, The Ham Shiffnal, Salop; R. Weaver, Lizard Grange, Shiffnal, Salop; W. Balman, Radley, Barton, South Molton, Devon; W. Graddon, Bratton House, South Molton, Devon; W. Bonnor, Hildersley, Ross; J. Hartland, Biddlestone, Ross; J. Jenkins, Chepstow, Monmouthshire; J. Morris, Cone Mill, Lidney, Gloucestershire; J. Hall, Spring Hill House; C. H. Powell, Monmouth; J. Worthington, Moorhill House, Stourport, Worcestershire; Hon. G. C. G. F. Berkeley, M.P., Berkeley House, Spring Gardens; J. Garmston, Worcester; W. Fownes, Hanbury, Droitwich, Worcestershire; the Rev. J. Gifford, Vicarage, Wootton; R. Tench, Ludlow; J. Barrett, Royal Hotel, Ross; L. Bushell, Bacon's End, Coleshill, Warwickshire; F. Matthews, Glyn Moore, Isle of Man.

CORN RETURNS.

(FROM THE LONDON GAZETTE.)

Notice is hereby given, that the Commissioners of Excise have appointed (in completion of the list of places inserted in the *London Gazette* of Friday, the 24th ult.) the following places, within the respective cities and towns after mentioned, as the places at which the accounts and returns of all corn purchased in the said cities and towns respectively, are to be made and delivered by the several persons required by the act 5 Victoria, sess. 2, cap. 14, to make and deliver the same, that is to say—

LOCALITY OF THE INSPECTORS' OFFICES.

DERBYSHIRE. — Chesterfield, Wheatsheaf, High-street.

NOTTINGHAMSHIRE. — Mansfield, No. 460, Queen-street.

LEICESTERSHIRE.—Loughborough, Churchgate.

NORTHAMPTONSHIRE. — Wellingborough, Harriot's-lane; Kettering, No. 5, Gas-street.

GLOCESTERSHIRE.—Northleach, opposite the Sherborne Arms.

SOMERSETSHIRE.—Wellington, High-street; Wiveliscombe, Market-place.

MONMOUTH.—Newport, Excise-office, No. 9, High-street.

DEVONSHIRE.—Honiton, Supervisor's-house, High-street, opposite the White Lion Inn.

CORNWALL.—Falmouth, High-street, opposite the White Lion; St. Columb, Barley Sheaf.

HANTS.—Christchurch, High-street.

HEREFORDSHIRE.—Hereford, Excise-office, Church-street; Kington, Oxford Arms, Duke-street.

SHROPSHIRE.—Wenlock, Excise-office, Barrow-street; Whitchurch, Excise-office, the Lord Hill, Watergate-street; Market Drayton, Excise-office, Phœnix Inn.

WILTSHIRE.—Salisbury, Cross Keys.

STAFFORDSHIRE.—Stafford, Star Inn; Burton-on-Trent, Royal Oak; Newcastle, Bankhouse, No. 29, Bridge-street; Stone, Fountain Inn; Uttoxeter, No. 2, Bridge-street.

ESSEX.—Chipping Ongar, Post-office, near the Town-hall; Saffron Walden, Sun Inn.

SUSSEX.—Midhurst, Spread Eagle.

BEDFORDSHIRE.—Leighton Buzzard, Leak-street.

BUCKINGHAMSHIRE.—Newport Pagnell, Swan Inn.

OXFORDSHIRE.—Witney, No. 2, High-street; Chipping Norton, No. 14, New-street.

LINCOLNSHIRE.—Bourne, South-street; Grimsby, Bethlem-street, the corner of Wellor-gate, Market-street; Alford, Windmill-street, Market-place.

YORKSHIRE.—Bedale, Black Swan, Market-place; Bradford, Permit-office; Hull, No. 13, Market-place; Richmond, King's Head; Selby, Petre Arms Inn, Gowthorpe-street; Skipton, High-street; Thirsk, Three Tuns, Market-place; Otley, Black Horse Inn, opposite the Market-place; Thorne, Market-place.

WALES.—Brecon, Lion-street; Bangor, High-street; Cowbridge, Cowbridge Arms, High-street; Corwen, Corwen; Llangefui, No. 4, High-street; Swansea, No. 17, Orange-street.

THE CURRENCY.

We extract the following curious calculations from the recently published *Life of M. T. Saddler, M.P.*

I. The paper currency in circulation in England and Wales, yearly, from 1814 to 1841 :—

Year.	Bank of England.	Country Banks.	Total.
1814	26,901,000	22,709,000	49,610,000
1815	26,886,000	19,011,000	45,897,000
1816	26,574,000	15,096,000	41,670,000
1817	28,274,000	15,894,000	44,168,000
1818	27,220,000	20,507,000	47,727,000
1819	25,657,600	15,701,338	41,358,948
1820	24,553,160	10,576,245	35,129,405
1821	20,443,320	8,256,180	28,699,500
1822	18,326,430	8,416,830	26,743,260
1823	19,582,348	9,920,074	29,502,422
1824	20,293,326	12,831,332	33,124,658
1825	19,290,570	14,930,168	34,220,738
1826	22,255,222	8,656,101	30,911,323
1827	21,512,491	9,985,300	31,497,791
1828	21,078,327	10,121,476	31,199,803
1829	19,640,000	8,130,327	27,770,327
1830	20,494,850	7,600,000 *	28,094,850
1831	19,070,824	7,300,000 *	26,370,824
1832 †	17,605,720		
1833	18,829,750	10,152,104	28,981,854
1834 ‡	19,126,000	10,154,112	29,280,112
1835	18,240,000	10,420,623	28,660,623
1836	18,147,000	11,733,945	29,880,945
1837	18,716,000	10,142,049	28,858,049
1838	19,359,000	11,364,962	30,723,962
1839	17,612,000	11,084,970	28,696,970
1840	17,231,000	9,981,286	27.212,286
1841	17,481,000	9,080,077	26,561,377
"	Dec.16,292,000	8,936,023	25,223,023

* Marshall's Tables, p. 63.

† We find no returns of the country-bank issues of this year.

‡ The returns from 1834 to 1841 are all of the October quarter.

II. To the years in the above table, however, which follow 1819, a large allowance must be made for the gold since thrown into circulation. This the author estimates at about £17,000,000 of permanent metallic currency, nearly the half of which is in the coffers of the Bank of England, and of various other banks and bankers, bullion merchants, &c. This would leave about eight or ten millions in *actual* circulation.

"This, however, is only a partial view of the case The nation has been prodigiously augmented since that period. Its population has increased, and its trade has still more rapidly grown and enlarged itself. The population of England and Wales in 1814 was under eleven millions;—in 1841 nearly sixteen millions. In 1814 our exports were fifty-three millions; our imports thirty-three. In 1840 our exports had risen to one hundred and sixteen millions; and our imports to sixty-seven millions. Let us place these figures side by side, and at once the wretched inadequacy of our present currency will strike every mind."

	1814.	1840-1.
Population (England & Wales)	10,700,000	15,911,725
Exports	£53,573,234	£116,479,678
Imports	33,755,263	67,432,964
Currency	49,610,000	37,000,000

III. The remaining point adverted to, is the constant connexion which is visible between reductions of the currency, and depression of trade and manufactures. This is shown in the following table:

Year.	Bank Paper.	Effects.
1816	£41,670,000	Distress.
1817	44,168,000	
1818	47,727,000	Prosperity.
1819	41,358,948	Distress.
1820	35,129,405	
1821	28,099,500	Great distress; County Meetings calling for relief.
1822	26,743,260	
1823	29,502,422	
1824	33,124,658	Great prosperity and speculation.
1825	34,220,738	
1826	30,911,323	
1827	31,497,791	
1828	31,199,803	
1829	27,770,327	Great distress; burnings and Meetings to petition.
1830	28,094,850	
1831	26,370,824	
1832		
1833	28,981,854	
1834	29,280,112	Return to prosperity.
1835	28,660,623	
1836	29,880,945	
1837	28,858,049	
1838	30,723,962	
1839	28,696,970	
1840	27,212 286	Distress and complaining.
1841	26,561,077 to 25,223,023	

FEAT OF STRENGTH.—A large number of the respectable farmers in the neighbourhood of Market Drayton assembled at the Phœnix Inn, on Wednesday the 11th inst., to witness the decision of a wager, when James Beardmore, the third son of Mr. Francis Beardmore, of the Dairy-house, near Drayton (a youth only seventeen years of age), was backed to lift up from the floor, and get upon his right shoulder, a bag of wheat of three bushels, weighing 11 score and 9lb. bag included), with his right hand alone, unassisted by his left hand, with which he was not to touch the bag. This very extraordinary feat of strength he very cleverly performed in the market-room of the Phœnix Inn, before the assembled company, by his stooping down, laying the bag on his lap with his right hand, then turning it round his hip upon his back, afterwards hitching it up his back and bringing it to his right shoulder, kept his left hand and arm down by his left side quite clear away from it—a most unparalleled performance. The free and generous burst of old English cheers by the company, when he stood up with the bag upon his shoulder, proved the view the farmers took of the performance, a performance which very few could do with both hands in the middle of a room.—*Chester Chronicle*.

BEST BREEDS OF SHEEP.

TO THE EDITOR OF THE MAIDSTONE GAZETTE.

SIR,—If you have room, will you do me the favour to insert in your paper of next week a few remarks on the value of Kent sheep, as compared with other long-wool sheep, and even with Downs? At the Maidstone Farmer's Club held on the 26th ult., the subject for discussion was the best breeds of cattle and sheep. It was the general opinion of those present that of the long-wool sheep in use, Mr. Goord's stood pre-eminent; and in bearing testimony to the excellence of Mr. Goord's new Kents, it is far from being my wish to make any invidious remarks, or to wound the feelings of any of those numerous breeders of sheep in Romney Marsh, among whom there are many good judges, and as a proof, they know how to raise stock valuable to the consumer. I may here state what cannot be easily, if at all refuted, that the Kent mutton realizes a higher price per stone in Smithfield market than the Leicesters, half-bred Leicesters, or even Lincolns; and this arises from the carcase consisting of considerable more flesh to the fat. I believe the fact is established beyond doubt that Mr. Goord's breed of sheep are the best in the county, as the success attending them at the Canterbury, Hythe, and Maidstone cattle exhibitions testifies. It must not be forgotten that there have been some very able competitors from Romney Marsh, and it might be added that about five or six East Kent flocks of Mr. Goord's pure blood have contended with the whole of Romney Marsh, or as many as might think proper to compete. The success of Mr. Goord's sheep have not been confined to wethers when slaughtered; tups, ewes, and ewe tags, are almost always successful over their opponents.

That most excellent judge of sheep, Mr. Smart, of Rainham, gained, at Canterbury, the first prize seven consecutive years, for rams of Mr. Goord's pure blood, and then was not beaten off the field of victory, but, with a truly liberal spirit, said he would withdraw for a time and give others an opportunity of gaining fame.

Some there are who say Mr. Goord's sheep are delicate, and have seen their best day; such is not the fact, and has been repudiated by gentlemen living in Romney Marsh, who use Mr. Goord's sheep, and are equally successful with their neighbours. What can be a greater proof of the strength of constitution than to find they almost invariably beat every opponent? Any man of common observation must know that the strength of constitution in any animal consists in a fine broad breast, with deep and expansive shoulders; this is a very leading feature in Mr. Goord's sheep, and by consequence of such fore-quarters, the loin and legs will be good and proportional: hence their superiority. The fine form of the rams and equality of wool were the admiration of all present at Mr. Fullager's on Thursday last. The wool was highly commended by a wool-buyer from Belgium, and his merchant from London. In asserting that Mr. Goord's sheep have not declined, I could produce many proofs that they improve and keep pace with any other sort worthy of notice; the *increased demand* for the rams is a sufficient criterion. I will here mention the fact, that more than 20 years since Mr. Smart, of Rainham, exhibited some Kent wether sheep at the old Smithfield cattle show, against Leicesters, or any other long-woolled sheep, and the result was that the lightest Kent weighed more than the heaviest of any of those competing; and whether it was from fear of coming to the *scales* I am unable to say, but the owners withdrew their sheep, and the weight was not declared, whilst Mr. Smart had his slaughtered in London, and the weights witnessed to. Now, about twenty years elapsed when Mr. J. Oakley, residing near Rochester, showed three Kent wether sheep of Mr. Goord's breed at the same show in Baker-street, and it was evident they maintained their character for coming to the best of all tests, "weights and scales." This brings me to a very interesting trial of the relative value of seven breeds of sheep, as tried on the farm of Mr. Wm. Hobbs, of Bocking, Essex; to whom I am indebted for the report of the association who tried the experiment. Mr. H. states that for actual *profit*, Mr. Goord's will be generally successful, although they may not be quite so handsome to the eye and fine to the touch as some others. A sweepstakes was entered into by some members of the Braintree and Bocking Agricultural Association, who put twenty-seven sheep into a grass-field, each lot of three sheep and three roods of ground railed in, and then supplied with artificial food in equal proportions and quality; the balance sheet shows that the Kent sheep were successful, beating half-bred Leicesters, pure Leicesters, half-bred Downs, three lots of pure Downs, South Down with a cross of Gloucester, and thorough-bred Gloucesters. It gives me much pleasure in stating that these three Kent wethers were of Mr. Goord's pure breed, thus establishing in another county the superiority of this justly esteemed breed over every other class that can be brought against them. Neither are their merits confined to England, but sought after and exported to every climate and country where a spirit of enterprise emulates the breast of the farmer and grazier. An interesting fact is evinced in the trial of the seven breeds referred to, namely, the thorough-bred sheep maintain their feeding properties over the cross-bred sheep, for the half-bred Leicesters, and Down crossed with the Gloucester, lost more in weight when slaughtered than the others; it further appears that the Downs did not do so well as the Leicesters, Gloucesters, and Kents. A discerning public, and I cannot possibly omit the London consumers, are so well acquainted with the fact, that the animal producing the greatest quantity of *flesh* is the *best for consumption*, and London butchers seeing this, and knowing also that Kent sheep are generally more profitable to themselves, they purchase them freely. The Kents are next in value to Downs, and such is the demand for Kent mutton in London, that scarcely any number are now sent by the grazier to Smithfield market, the London butchers purchasing them in the country. Facts are stubborn—and notwithstanding the Leicester men affect such scorn of Kent sheep, yet the public can duly estimate their good qualities. J. Palmer, Esq., of Herne, lets rams annually, and he is candid in saying that he had tried other breeds of long-woolled sheep, but found none so profitable as Mr. Goord's new Kents, which he has used for twenty-five years, and in the most handsome manner attributes his success to Mr. Goord's sheep.

Mr. Editor, I really apologise for this long letter, and fear you may not have space, but as the object is so good, I hope your wide circulation may effect that purpose. I am yours, much obliged,

Thomas Cull.

East Farleigh, Maidstone, June 29, 1842.

REMEDY FOR THE TURNIP FLY AND THE GRUB.

Sir,—A correspondent of yours a short time since said that he had great pleasure in communicating to his brother farmers that he had discovered gas lime sown upon turnips before their coming up to be a sure preventive against the ravages of the fly, and when gas lime cannot be obtained, gas tar reduced with common lime may be successfully applied between the drills, carefully avoiding the plants.

These are dangerous articles to use upon young plants on account of their great causticity, as I have frequently experienced; but if he were to use some of the black top dressing, made by my patent process of heating retorts with chalk, gas tar, and oil mixed with the soot, the produce thereof, he would find it a much safer and effective preventive against the fly, and an excellent manure at the same time.

I should be happy to shew any brother farmer the great effect it has had on my wheat, put on as a top-dressing to destroy the slug.

The part of the field was the worst, and is now one-fifth better than any other in every respect. I put on about 24 bushels to the acre, sowed broad-cast. A neighbour of mine put on only 18 bushels with good effect also.

I obtained it of Mr. Drew, at the Tar Works, Morden Wharf, Greenwich, at ninepence per bushel delivered in London.

I am, Sir, your obedient servant,

C. T. Holcombe.

Valentines, Ilford, Essex, June 28.

ROYAL AGRICULTURAL SOCIETY.—On Tuesday a meeting of a few gentlemen, to which Sir Thomas Baring and Sir William Heathcote were invited, was held at the Guildhall, for the purpose of arranging the necessary preliminaries to an invitation to the Royal Agricultural Society of England to hold their annual meeting for 1844 in this city. The meeting being of a private character, little has transpired, but it is understood that it was recommended to the Mayor to convene a special meeting of the Town Council for the consideration of the subject. It is said that Wm. Simonds, Esq., has most generously offered the gratuitous use of a sufficient quantity of land for the operations of the society, situated in conformity with the requirements of the committee, and that therefore the chief impediments to the transmitting of the invitation is the raising of a sufficient sum for the fencing of the show-yard and other purposes, estimated at about 500*l*. We could flatter ourselves that little difficulty would be experienced in raising this sum, as such a meeting would not only have a momentary tendency in promoting the trade of the city, but would have a permanent effect by giving it additional public importance.—*Hampshire Chronicle.*

SWISS COWS IN HARNESS.—We took a drive yesterday up a most romantic valley, and met two peasants driving their cow in a little cart. They stopped to offer us some pears. I particularly remarked the cow, to see if working did her any harm; she was in excellent condition. I wish the cottager in England would adopt this custom; it never comes into his head that the cow can do anything but give milk. We know nothing of economy in England; what is daily wasted in it would save from starvation the miserable creatures who die in the streets. But what is every body's business is nobody's, and so those who can afford it go on allowing waste.—*Lady Vavasour's Last Tour and First Work.*

AGRICULTURAL QUERIES.

THE CONSTRUCTION OF FOLD-YARDS.

Sir,—It would confer a great favour on a young farmer, if some of your able and experienced correspondents would inform him of the best mode of constructing fold-yards, with a view to their effectual and permanent drainage, into which the urine from a large number of cattle tied up also runs; and the best plan of forming a tank into which the drains could empty themselves without any danger of filling up.

Much has been written lately on the value of such methods of preserving what our forefathers allowed to run to waste, but if we have to submit to all the labour of carting out the liquor in a liquid state, as is recommended, I feel assured no large farmer can possibly do it, during the winter months especially. Perhaps some of your intelligent correspondents would instruct me as to the best method of obtaining all the richness and vegetable powers of the urine in a *solid* form, while the liquid thus divested of its enriching qualities is allowed to pass off by a drain at a higher level, and thus save a great deal of trouble and expense, which are always important objects to the practical farmer, while at the same time he secures the most valuable manure made on his premises.

It is hoped an early insertion of the above will elicit an early reply, which will be very acceptable to,

Sir, your obedient servant,

July 15*th*, 1842. R.

A "Young Farmer" says—"I have recently seen some discussion about the application of lime to land in a caustic state; being no chemist, I should feel much obliged to any of your readers who will explain when lime is, and when it ceases to be in a caustic state—I mean in the usual stages it goes through on being applied to the soil."

A correspondent dating from Kineton, Warwickshire, soleiits information relative to an ophthalmic disease (provincially termed "blight") which has made its appearance among his ewes.

The eye at first is partially closed, runs slightly, continues increasing a day or two, and the sheep is blind. In some the discharge continues, the eyelids being nearly closed; in others they are rather distended, the eye appearing of a dullish white colour. These seem to have less inflammation and pain than the others, and do not lose condition so fast. Believing the disease to be known to most flockmasters, it is unnecessary for me to describe it more minutely.

Information is solicited—1st, as to treatment. Is bleeding, fomenting with aperient medicine necessary? Secondly, any information that can be given as to the exciting causes which originate it, with any precautionary measures that might be adopted to prevent its recurrence, would be conferring a benefit upon numbers.

The sheep have been penned to clover, without being closely confined, having a constant supply of salt, a few beans, and plenty of water.

ANSWERS TO QUERIES.

CAUSTIC LIME.

Sir,—In reply to your correspondent "A young Farmer," I beg to inform him that lime remains caustic in the soil for some time after it is applied, or until it has gradually absorbed from the atmosphere, and becomes saturated with carbonic acid gas. It then becomes carbonate of lime, or chalk. The process, therefore, is very simple; the carbonic acid gas is easily again driven off by the chalk being heated to redness, which converts it again into lime. When lime is slaked it still for some time remains caustic.

Crete.

CAUSTIC LIME.

Sir,—I beg leave to offer an answer to the query of "A young Farmer" in page 9 of your last week's publication, viz.—"when lime is, and when it ceases to be in a caustic state in the usual stages it goes through on being applied to the soil?" Your correspondent must understand that the unburnt limestone is a carbonate of lime—that is, lime neutralised by carbonic acid—now burning expels the carbonic acid, and the limestone then becomes pure or caustic lime. If the lime in its pure or caustic state is left exposed to the air for some time, it rapidly absorbs carbonic acid from the atmosphere and again becomes a carbonate of lime, though not in a cohesive state as it was before the burning; therefore it is plain that the more carbonic acid the lime absorbs after slaking in the field, the less caustic it becomes. Whenever we wish to know in what state lime is as to its causticity or non-causticity, we need do nothing more than merely drop a little vinegar upon a small quantity of the lime; if the lime effervesces or bubbles up it contains carbonic acid, but if it is caustic the vinegar will sink into it without causing any bubbling, unless the lime is saturated with some of the stronger acids; the greater the effervescence, the less caustic will the lime be.

I am, Sir, yours' respectfully,

Corwen, July 7. Corvenius.

MANGLE WURZEL.

Sir,—In answer to M. B. Collins, I would offer my own experience. The Swedes (purple-top) are drawn about the middle of November when the ground is dry, carted to a dry piece of grass land, and placed as it is termed—that is, put close together and upright; by having them say twelve feet wide in ranks, with room for a cart to go between, you can choose which to take, and calculate to a nicety the time they will last; neither roots nor tops are removed, but you must be careful not to allow any water to rest on the ground. In spring we generally run a scythe over the tops to stop their growth. Last year there were no rotten turnips out of ten acres; they will keep to the summer. I have tried many ways; this is the best I know.

For mangle-wurzel the ground with me is always subsoiled the previous winter and manured with rich two-year old compost. Seed two in each hole, dibbled in at eight inches and rolled—early thinned and hoed; ground between often stirred; leaves never stript.

With me the seed is always passed through a sieve, and only the large seeds sown—say the half is waste. But the crop will well repay this expense, and you will have but few running to seed. Be careful in tapping to stay an inch from the root. We store them under sheds, building them in walls two feet thick, with here and there a tie to support them.

We drill at 27 inches, and finish the third week in April; in fact they are put down with the potatoes.

AN OLD SUBSCRIBER.

N.B. I forgot to say the seed is steeped for 24 hours in the drainings of dung, and dried with sand or coal ashes.

The admixture of gypsum with manure heaps, with a view to fix the volatile ammonia, has been tried, and has not been found to answer as well as theory would have led us to expect. It is the opinion of a chemist who has studied the subject, that the sulphuric acid diluted should be tried; but this being a new matter must be left to experiment, and no rules can be laid down for the process.

In reply to "Enquirer," gypsum could not be made artificially so cheaply as it can be purchased, and the carriage cannot be expensive on the small quantity which is applied per acre. We are ignorant at present why gypsum acts on some soils and does not act on others. To dry fresh dung in the air would be to give up its most valuable ingredient—the volatile salts. Besides, dung so dried would decompose less readily, and consequently (apart from the loss), the object of reducing it into a state fit for drilling would not be attained.

SIR,—I recommend to your correspondent the following method of destroying ants:—Oatmeal, 1lb., coarse sugar, ¼lb.; to be well mixed together; to this add 2 oz. of finely ground pepper. Lay the mixture upon white earthenware where the ants resort, and cover it over to be kept dry.

ANOTHER METHOD.

Toast the inner side of the skin of a piece of bacon till it becomes crisp. Lay it on the ground in such a manner (taking care to prevent its getting wet), that the ants may "step in," which they will do, and fasten themselves to it; lift it up quickly and immerse it in water.

I should feel obliged if any of your readers would inform me of a cure for Diarrhœa in lambs, as I have lost several of late.

I remain, Mr. Editor, yours, &c.,

Suffolk, July 12. VILLICUS.

CALENDAR OF HORTICULTURE FOR AUGUST.

KITCHEN-GARDEN.—VEGETABLES.

First week.—At this season, when vegetable growth is declining, there are operations which must be performed almost to a day, and therefore *sowings* should be immediately made of—

1. *Cabbage*, for the main spring and summer supply. The best sorts are the small and larger York, the Vanack, East Ham, and Downton; the last, perhaps, cannot be procured of certain purity since the decease of the president Knight, but a variety so true, and little liable to run up, was seldom seen. If persons are doubtful of the seed, it is a wiser and safer plan to purchase plants at the seasons of transplanting. The seedlings of April, 1841, in many instances ran to seed to so great an extent, that out of fifty plants scarcely ten became hearted cabbages.

2. *Carrot-seed*, to raise a few plants for the early spring. A later sowing can be made in the middle of the month for a main spring supply.

3. *Onions.*—Some sow the bulbing onions for winter and spring, and a little seed of the hardy Welch, as it resists the sternest frost; but if the autumn crops yield well, and be safely housed, few others can be required, excepting as green onions to be employed with salads. Radishes, salmon, and scarlet, and short-topped, also some of the small white turnip-rooted, ought to be sown.

4. *Turnip-seed*, the nimble Dutch, for the last crop.

Second week.—The prickly or *winter spinach*, sow in drills, well watered, if the weather be dry, the drills a yard asunder. Nothing so effectually secures a crop as these waterings under the seed; and the moisture can long be retained by laying an inch of old rotten leaves over the drill. Sow the brown Dutch, common green cos, and cabbage lettuces. In situations where the subsoil is very damp and springy, we have seen lettuces succeed and sustain the cold of winter, by being sown or transplanted on ridges; but it is yet too early to transplant. Sow the main crop of *endive*.

Cauliflower-seed is sown at the latter end of the month, or about the 21st at earliest.

Transplant late brocoli, savoys, and Brussells sprouts—do this early. Plant either in trenches a yard asunder, digging into the bottom three or four inches of decayed leaves or rotten manure; or manure the surface, dig, and plant, row by row, giving water as the work proceeds; or finally, if circumstances require dispatch, just loosen and work the soil, in the site of each intended row; plant by trowel, or dibble from two feet to three feet apart, and give water. When the vegetables have established themselves, dig and pulverize the spaces with some manure, and lay more in a line on each side of the plants.

The *early celery* will be large, and before earthing deeply, the weak lower leaves may be displaced, leaving a clear white stem. Loosen the soil, water it, and lay leafy (not rank) manure three inches deep in the trench, placing it firmly around the celery. We have seen lately trenches entirely filled to the surface level with the old droppings taken from expended mushroom beds.

Artichoke plants, if in full bearing, should be relieved of those small heads which arise from the sides, and as each large head is taken for the table, the stem ought to be broken away to the base.

If the *onions* be mature, twist the stems, and when somewhat dry remove the bulbs to any airy shed to finish the drying, prior to storing them, or tying up in ropes, for winter use.

MISCELLANEOUS OPERATIONS.

Propagate sweet herbs—sage, hyssop, marjoram, lavender, &c., by cuttings or slips; the latter with a few roots adhering if possible. Plant them in a moist, shady border, fixing each firmly in the soil, and giving water.

Cut back or remove all straggling shoots of the above herbs; this will give the plants figure, and promote the growth of new shoots. *Gather* herbs in flower, for drying.

Take up *garlic* and shallots, when the leaves begin to wither; then dry and lay up the bulbs or cloves.

Destroy weeds every where, and by all means.

At this season they multiply exceedingly, and seed freely. If suffered to remain, endless trouble will be occasioned, whereas a timely attention will check the intruders and keep them under.

FRUIT DEPARTMENT.

Lay in all the retained shoots of apricot, peach, and indeed of wall trees generally, in neat and regular order. The fruit, if the weather retain its warm, sunny character, will speedily become ripe; therefore nets should be so placed along and under the trees, as to prevent peaches from falling to the ground. Other nets may be placed over the fruitful branches to protect the fruit. If mildew (very rife this year) affect the tenderer shoots, dust them with sulphur, or apply it mixed with water as a wash, by means of a soft brush, avoiding the fruit. Remove the glasses from peach-pits, and the houses where the fruit is cut, and regulate the shoots; the wood will ripen much better.

Clean all the fruit borders, making them neat and free from weeds.

Fig-trees.—Secure all the stray shoots, laying them in close to the wall; pick off every embryo fig as it appears; by so doing other smaller figs will form at the angles of the leaves, and remain safe all winter, if the trees be covered with a mat or fir branches, and will enlarge in the spring. If the figs first formed after midsummer, be permitted to remain, they will, in nine cases out of ten, perish during the winter's frost. Never shorten any shoot by securing at its full length every well-placed branch; the fruit will ripen more early, and the new wood will become more fertile.

Vines.—Again look over the trees: the fruit, on well disposed branches, will ripen speedily; and, unless appearances change materially, prove abundant and handsome.

Grape-wine.—It may be irrelevant to the subject of an article upon horticulture to allude to the vintage, but the experience of a great many years authorises us to state that by taking green grapes just at the period before the berries begin to be transparent, that is, at the critical moment when they have acquired their full quantum of tartaric acid, prior to the formation of saccharine matter—a most delicious and perfect wine can be made, equal to many of the wines of the Rhine. Forty pounds of grapes, with their stalks, are to be bruised, and will produce six gallons of wine by adding so much water as with 21 or 24lbs. of loaf-sugar will make up nearly seven gallons of "*must*." A little experience will instruct in all the minutiæ, but the first indispensable is to digest the bruised berries in the water for a day or two, in a situation where the heat does not much exceed 60 deg., till a slight beading indicate the commencement of fermentation. It is then to be strained through hair sieves, and pressed, and the sugar being added, the quantity is to be made up, if required, by water poured over the pressed grapes. The fermentation is to be carried on in a cool apartment or cellar, till the specific gravity be reduced from about 1·120 to 1·080, and the wine is then to be turned, and kept in casks undisturbed till December. It should then be racked oft, and kept one entire year in wood, never adding one drop of ardent spirits. The cost will be the sugar, and the labour *ad valorem*.

Melons are in full bearing. Water over the leaves before sunset, and shut up close, to repel the spider *(acarus)*. Stop every fertile lateral at the second joint beyond the fruit. Give air every warm day, early.

FLOWER-GARDEN.

Neatness in every form, removal of old and cut flower-stalks, hoeing and raking, mowing and rolling lawns, and such routine, constitute the general detail of operations; but in particular it will be essential to attend minutely to the *dahlia*, for an amateur who pretends to exhibit for a prize can expect success—on reasonable grounds only—by sedulous observation and adroit management. First, the ground should be hoed, loosened, and regularly watered—once, with a weak solution of nitrate of soda (one ounce to seven gallons); then covered with horse-droppings, and swept with the adhering road-sand from the highways. Second, by staking firmly, with one central stick, and four or five others, around a plant. Third, by cutting away all low and crowding shoots, keeping the laterals few and clearly apart, fastening each securely by flat bass ties to its appropriate stake; and finally, picking off all secondary and other useless bloom-buds. A few well-placed branches, and a few principal flowers, are in every way preferable to the crowded and confused bundles of twigs which disgraced the gardens some years ago.

Pelargoniums (commonly called *geraniums)* must be propagated forthwith. After each valued plant has ceased to flower, let it stand a few days in an east aspect, exposed without water, to give firmness to the wood; then take cuttings of three joints, trim the heels smooth, and insert them single in small sixties, filled with very sandy soil. Being deposited in close, warm frames, and shaded, roots will speedily emerge, and fill the pot. When so filled, transfer the young plants to larger "sixties," in soil composed of two-thirds perfectly mellow leaf-mould, one-sixth of yellow loam, and one-sixth heath-mould or white sand. After the middle of the month, we would place all cuttings in propagation-pots, twenty or more together, to stand so all the winter. These need not to be stimulated by heat: shading under glass will suffice to promote the slow development of roots. The old esteemed plants must be cut down to two or three low-situated buds, and after they push fresh shoots half an inch long, be repotted in a similar compost, shaking off the old soil, and removing all the straggling roots. The pots should be small.

NEW LAMP FOR BURNING TALLOW.—Josiah Taylor, of Birmingham, brassfounder, for improvements in the construction of lamps.—Enrolment Office, June 9, 1842.—These improvements relate solely to lamps for burning wax, tallow, or other fatty matter. The improved construction consists in having a vessel to contain the substance to be burned, and a chamber beneath it, for holding hot water, or hot metal, to liquidate that substance. As the hot water, or metal, is only required to melt the tallow or other fatty substance in the first instance, the tube which supplies the inner part of the wick with air, is furnished with two projections at top which turn into the flame, and by imparting heat down the tube, the tallow is kept for a continuance in a melted state. The hot water is to be poured in before lighting the lamp. When pieces of heated metal are used, the upper part of the lamp is to be taken off, to admit of their being put in the proper place. Outside of the tube for supplying air to the interior of the flame is another tube, containing the wick, having several slits formed therein, through which the liquid tallow flows to the wick. There is also another and larger slit in this outer tube, for the purpose of raising the wick holder, which is of the ordinary construction, having a projecting stud which moves up and down in the slit, and another stud which moves in a spiral round the air tube; so that when the tube is turned round, the wick or cotton rises or falls, as desired. On the upper part of the tube are three projections, against which one of the arms of the frame of the glass shade comes, and when that frame is moved round, the tube will also be moved round, and thus raise or lower the wick. The claim is to the mode of constructing lamps for burning tallow, or other fatty matters, or wax, by combining with a vessel to hold the tallow or other substance, a vessel to contain hot water or heated pieces of metal.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

EXETER LAMMAS FAIR.—Our Lammas Fair has been held this morning, but, probably from the circumstance of other considerable fairs, as well south as east of us, falling on the same day, the supply has been small, and a quieter fair seldom seen. Notwithstanding this, however, no inconsiderable portion of the fat bullocks have been sold, as also that very superior articles—of which there were several—have brought a better price than we have heard of in this way for some time. Thus we may mention that Mr. Thomas Gibbings, of Bramford Speke, for a singularly prime heifer, was offered by a respectable butcher attending our market, 10s. 6d. per score, by weight, but which offer was declined by Mr. G., he preferring to sell the animal off hand at a given price, which it was computed would be full the price already named per score. Mr. Kingwell, of Fair Oak, Honiton Clist, sold a couple of very prime heifers, for sums that it is thought will be found when tested in the scales, to be little of any thing short of half a guinea per score. Nor ought we here to omit an especial mention of a most extraordinary heifer, driven in by Mr. Wm. Rookes, of Heavitree-road, and which we wish he had exhibited among the Devons last week at Bristol. This beautiful animal is only three years old, and was bought, a poor bullock, as we understood at 20*l*. She has had green food and roots only, and is now estimated at 50 score. The heifer drew great attention, and was universally admired. Mr. Rookes intends keeping her until Christmas. Mention also must be made of a remarkably fine buss, among the stock driven in by Mr. John Ridsley, of Pinhoe. This, likewise, was generally admired. It was estimated at 28 score, and was bought by Mr. John Bartrum, of this city, butcher, for 14*l*., or 10s. per score. Several fine bullocks also were sold by Mr. Richard Norris, of Broadclist, at sums giving about 10s. per score. Indeed, the quotation for fat bullocks must be stated thus—very superior articles fetched from about 10s. 3d. to 10s. 6d. per score; but good bullocks, both heifers and oxen, and in these by far the largest share of business was done, were from 9s. 9d. to 10s. per score; while articles not equal in point of quality, were from 9s. to 9s. 6d. per score; or, we will say, that for the general business the quotation was from 9s. to 10s. per score. The show of plough oxen was by no means large, and there were some up-countrymen who had come with a desire to buy them, but there was a good deal of difficulty in adjusting the terms. The farmers, however, were by no means inclined to give way—indeed, we may say, as characteristic of the proceedings of the morning, that whatever this might have been else—certainly it has not been a declining fair; and we must quote oxen at from 30*l*. to 40*l*. the pair. The same observation will apply to good steers, of which also the show was by no means large; and, speaking generally of this description of animals, we must quote them at from 18*l*. to 26*l*. per pair. The show of cows and calves presented nothing different from that which in this respect assuredly characterises our weekly market, and the quotation, with dull sales was from 9*l*. to 15*l*.

At OVERTON (HANTS) GREAT SHEEP AND LAMB FAIR, held on Monday last, about the usual average (70,000) were penned, which moved off slowly at a reduction of from 2s. to 3s. per head from last year's prices. Ewes, 24s. to 35s., one or two extra conditioned lots, 40s. to 42s.; wethers, 26s. to 40s.; Lambs, 16s. to 31s. An unusually large concourse of people was attracted to the show ground, where more than 2,000 ewes and lambs were entered to compete for the various handsome prizes, which were decided as follow:—

CLASS I.—Wether Lambs.—Sir Thos. Baring's Cup of Ten guineas value, for the best 100 lambs; Right Hon. C. S. Lefevre's Cup of Five guineas value, for the second best. Competitors—C. Edney, Whitchurch; T. Dowden, Micheldever; — Webb, Hannington (second prize); H. Pain, Micheldever (first prize); — Garrett, Herriard.

CLASS II.—H. Fellowes, Esq., a Cup of Ten guineas value, for the best 100 wether lambs, any breed; Sir W. Heathcote, a Cup of Five guineas value, for the second best. Competitors—W. Pain, Freefolk (first prize); W. Edney, Overton (second prize); R. Pyle, Tufton; — Hutton, Upton Gray.

CLASS III.—A Cup of Ten guineas value, for the best 100 Hampshire-bred wether lambs, given by W. Portal, Esq.; a Cup of Five guineas value, given by G. Twynam, Esq., for the second best. Competitors—T. Dowden, Micheldever; John Platt, Canon Heath; G. Budd, Hatch Warren (first prize); J. Cozens, Overton (second prize); T. Wigg, Wootton; — Hutton, Upton Gray; — Crimble, Overton.

CLASS IV.—A Cup of Ten guineas value, given by W. Beech, Esq., for the best 80 lambs; a Cup of Five guineas value, for the second best. Competitors—Harris, Park Privet (first prize); Hide, Breach (second prize); Bunce, Weale; Ewen, ditto.

CLASS V.—A Cup of Ten guineas value, for the best 100 full-mouthed ewes, bred and fed on the farm. Competitors—W. Pain, Freefolk (prize); G. Budd, Hatch Warren; T. Dowden, Micheldever.

CLASS 6.—The Fox-hunter's Cup of Ten guineas value, for the best pen of ram lambs, any breed, given by gentlemen (subscription) who usually hunt with the Vine Hunt, the lambs exhibited in their natural state, untrimmed. Competitors—Hazelton, Kingsclere, breed, Sussex downs; C. Edney, Whitchurch, Hampshire downs; W. Edney, Overton, Hampshire downs; J. T. Twynam, Whitchurch, Cotswold and down (prize); W. Saunders, Cranbourne, Hampshire downs; T. Dowden, Micheldever, Hampshire downs.

CAMELFORD LAMB FAIR produced a good show of sheep and lambs, there being above 4,000, for which there was a good demand. About 3,000 were sold at prices varying from 34s. to 24s. per head; fat sheep at 5½d. per lb. The bullock fair on Tuesday produced a very superior show, but business was very dull. A good many changed owners, but at low prices; working oxen and steers from 25*l*. to 30*l*. per pair; fat cows (very few) 53s. per cwt.; cows and calves, from 8*l*. to 14*l*. It was observed by competent judges that they never saw such a splendid show of cattle in a fair for condition and quality.

STOB'S MUIR MARKET.—This market was very poorly supplied with stock. That of sheep and lambs was very small and inferior, the former bringing from 14s. to 22s., and the latter from 6s. to 10s. 6d. each. The cattle market was equally ill supplied with good fat stots. The good were immediately bought up at about 8s. 6d. per stone, Dutch weight. A great show of half-fat grazing cattle were brought forward, but they experienced a very dull sale, at about 30 per cent. below the prices of last year, and many were driven off the Muir unsold.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JULY.

At this most important period of the year—when the attention of all classes of the community, but more especially the agricultural body, is naturally directed to the growing crops, in order, if possible, to ascertain their condition, and forthcoming probable yield—we are, as a matter of course, called upon to enter fully into those details immediately connected with so important a topic of consideration. But here, we may be permitted to observe, that the task—in the apparent conflict of opinion observed among many parties—of collecting such information upon which implicit confidence may be placed, is a matter of no ordinary difficulty. However, the appliances which we have at command to ensure this end are, we need scarcely intimate, those of a more extensive nature than those possessed by any other agricultural publication now in existence, or that ever existed; hence deserving of some consideration on the part of the reading world. Disregarding, therefore, the many overcharged statements which have been promulgated during the month, we shall confine ourselves to facts as they have occurred. First, then, with respect to the wheats now on the ground. In the early part of the above named period, the accounts which reached us from various parts of England in relation thereto, were not of so satisfactory a character as could be desired, either as respects those derived from autumn or spring seeding, and many fearful forebodings were indulged in as to ulterior consequences. But the weather proving unusually fine and seasonable, and several continuous showers having fallen, the prospects speedily brightened; indeed, we might safely venture to assert that the oldest farmer living never witnessed so great an improvement in the same space of time, as during the second fortnight of July, current year. This pleasing state of things has continued even up to the present moment, and this leads us to the consideration of what may be about the general acreable produce. That that of the spring corn will turn out good we have no hesitation in stating; but that from grain sown in the autumn must, we fear, owing to the thinness of the plant, prove limited. Yet, in reference to the aggregate for this we are fully impressed with the belief that it will amount to nearly or quite a fair average, beyond which our expectations do not extend. Barley is admitted on all hands to look surprisingly well, and it may be safely inferred that the yield of that description of produce will be good. In almost every county great complaints have arisen as to the shortness of the straw of oats, yet their ears are progressing favourably, and a full return is looked forward to. Of beans and peas we have few observations to offer, further than that they have the appearance of good heavy crops.

We have now to refer to the stocks of wheat of last year's growth in the hands of the agriculturists. It has been asserted that they are low in the extreme; so much so, in fact, that an importation of a million of quarters will be required to make good the apparent and alarming deficiency. Now we have been perfectly aware that the available supplies are certainly scanty for the time of year, but we cannot, after mature deliberation, lead ourselves to believe that—when the large quantity of foreign in bond and warehouse in the various ports of the United Kingdom, it amounting to over 1,000,000 quarters—so extensive a receipt would be necessary to meet our wants; while past events have proved the correctness of our position. For instance, the deliveries of wheat in most of our markets have been increasing—no very sure indication of great scarcity—while the prices have given way to the extent of from 3s. to 5s.—in some instances more—per quarter. As respects future prices—by the operation of the new corn bill, the duty on foreign wheat has declined to 8s. per quarter, while it is very evident, from the present state of the demand, that no further material depression will take place in that impost for some time hence. This circumstance has been productive of extreme caution on the part of the importers, many of whom, rather than land their wheat under lock, have paid current duties as the vessels have arrived; while no inconsiderable quantities of the old stocks have been brought into the market free. Here, then, it will at once be perceived is one of the primary causes of the heaviness in the wheat trade, and the declining currencies. If we regard the winter months we see no hopes, unless very unpropitious weather should be expected for the ingathering of the crops, for any improvement in this respect; yet there is not, we conceive, any positive reason apparent for indulging in fearful forebodings for the present as respects the value of farm produce falling to what may be termed ruinously low figures. The measures past by the legislature are, it is well known, anything but favourable to the interests of the agricultural body. Yet let us hope that our best wishes respecting them may be realized, and that that body may continue to prosper in spite of all the machinations set to work against them.

The cutting of wheat and barley was partially commenced as early as the 20th, on some good situations in Devonshire, Hants, Wilts, &c., but the harvest cannot become general, even in these forward districts, earlier than about the 10th proximo. The few samples of new Talavera wheat which have been rubbed out, have proved of fair quality; still this is no criterion by which to guide our judgment in respect of the whole crop.

Most of the hay and clover have been secured in the south, but in Yorkshire and our other northern districts comparatively little progress has, as yet, been made. The crop is decidedly the lightest cut for many years past; it being stunted and patchy, and leaves the soil not only in a bad state for a second cut, but causes the land to become very full of weeds.

As to potatoes, those early planted have done extremely well, and a good return may be calculated upon.

The great annual meeting of the Royal Agricultural Society of England at Bristol drew together, we need scarcely intimate, great numbers of farmers and others. As a whole, the exhibition was one of the most splendid ever witnessed, and sure we are that a great amount of benefit cannot fail to be derived from the society in question.

In the different markets of consumption held since our last report, the supplies of both English and foreign wheat have been on the increase, which circumstance has produced much heaviness in the demand for that article, and the rates have given way from 2s. to 5s. per qr. Barley, though in limited supply, has proved a mere drug; and, in order to effect sales, an abatement of quite 1s. per qr. has been submitted to by the holders. The malt trade has continued slow, yet no quotable variation has been noticed in the currencies. An immense quantity of foreign oats, viz. about 50,000 qrs. having come to hand, and being partly on sale duty free, the trade with all descriptions has proved dull, and the figures have given way from 6d. to quite 1s. per qr. Both beans and peas, as well as flour, have had a downward tendency, with a very limited amount of business passing in them.

Our advices from Scotland are very satisfactory, since the whole of the crops are represented as unusually strong and healthy, with every reasonable prospect of full average yields. The corn trade has ruled dull in all its branches, and figures have given way to the extent of 1s. per qr.

The stocks of grain throughout Ireland have become very circumscribed. This has induced the holders to demand full quotations for all descriptions of corn and pulse, which has been productive of much misery amongst the lower classes. The prospects of the fields are certainly good, yet large quantities of wheat and barley have been imported into Dublin and several other ports, for this country, to in some measure make good the scanty supplies on hand.

The following is a statement of the supplies and prices of fat stock, exhibited and sold in Smithfield cattle market during the month. The former have been composed of 10,280 beasts, 146,500 sheep and lambs, 2,029 calves, 2,412 pigs; while the latter have ruled as follows;—Beef, from 3s. 2d. to 4s. 6d.; mutton, 3s. 4d. to 4s. 6d.; lamb, 4s. 8d. to 5s. 4d.; veal, 3s. 6d. to 4s. 6d.; and pork, 4s. to 4s. 10d., per 8lbs. to sink the offal.

By the above statement it will be perceived that the supplies of beasts and pigs have been about the same as those shewn in June; and that those of sheep, lambs, and calves have been greatly on the increase.

Those quarters whence the beasts have come to hand have been as follow:—From Lincolnshire, Leicestershire, Northamptonshire, and our other northern grazing districts (the "season" from those parts having now fairly commenced), we have received about 2,800 short horns and runts from Norfolk, Suffolk, Essex, and Cambridgeshire; including the Isle of Ely, 750 Scots, homebreds, &c.; from others of our grazing districts, such as Warwickshire, Herefordshire, Devonshire, Sussex, Surrey, Kent, Oxfordshire, &c., about 3,800 of various breeds; from Scotland, by steamers, 700 horned and polled Scots; the remainder of the supplies being derived from the stall feeeders, &c., in the neighbourhood of London. As to the quality of the supplies of both beasts and sheep, this has been good for the time of year; and very few cases have come under our notice of their being affected with the epidemic, but which is we understand still prevailing in a mild form in the north and elsewhere. However, but few losses, comparatively speaking, have been sustained. The supplies of country-killed meat, received in the metropolis, having necessarily been small, the demand for live stock in Smithfield ruled tolerably steady, if we except that for veal, the value of which has declined 6d. per 8 pounds; and the fluctuations which have occured in the various quotations have not been to say extensive, while fair clearances have been effected by the salesmen.

About 7 beasts have been imported into London under the existing regulations laid down in the new tariff, from Hamburgh, by steamer The quality of this stock has been good, and it has stood the test of the sea voyage remarkably well.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, July 26, 1841, and Monday July 25, 1842.

At per 8lbs. to sink the offals.

	July 26, 1841.				July 25, 1842.			
	s.	d.	s.	d.	s.	d.	s.	d.
Coarse & inferior Beasts	3	6 to	3	8 ..	3	2 to	3	6
Second quality do.	3	10	4	0 ..	3	8	3	10
Prime large Oxen......	4	4	4	6 ..	4	0	4	2
Prime Scots, &c.......	4	8	5	0 ..	4	4	4	6
Coarse & inferior Sheep	3	4	3	6 ..	3	4	3	6
Second quality do.	3	8	4	0 .	3	8	3	10
Prime coarse woolled do.	4	2	4	6 .	4	0	4	2
Prime Southdown do..	4	8	5	0 ..	4	4	4	6
Lambs................	5	0	6	0 ..	4	4	5	0
Large coarse Calves ..	4	2	4	8 ..	3	8	4	0
Prime small ditto.....	4	10	5	6 ..	4	2	4	6
Large Hogs..........	4	0	4	6 ..	4	0	4	6
Neat small Porkers ..	4	8	4	10 ..	4	8	4.	10

SUPPLIES.

	July 26, 1841.	July 25, 1842.
Beasts...	2,240	2,411
Sheep and Lambs	23,950	29,600
Calves..............	130	176
Pigs................	529	368

Up to Newgate and Leadenhall Markets we have received, from distant parts of England, by railway and other modes of conveyance, about 80 carcases of beef, 800 do. of mutton, 900 do. of lamb, 1,200 do. of veal, mostly from the western counties, and 900 do. of pork; while the supplies of London-killed meat have been seasonably good. The primest meat has commanded a steady inquiry, at full prices, but in other kinds little has been passing, at barely late rates.

YORKSHIRE.

The weather has been auspicious generally for the operations which take place at this season of the year, and most of them have been very successfully terminated. The land is got into admirable order for sowing turnips, and the season was remarkably genial—warm with frequent showers, and the seed germinated with rapidity and vigour, and all things augur prosperously for a good crop. The growth has been so rapid that the hoe is now making great progress, and though patches have gone off by the fly, still upon the whole it appears to be a turnip season. The corn crops are now fully bloomed, and in some forward districts the barley is beginning to change colour, and harvesting may be expected to commence in about a month from this time. The wheats are very promising, and though we have seen more straw on the ground certainly, yet the prospects of a full yield were never better. The spring wheats, though somewhat lighter than the autumnal sown, are very promising, and a large produce of wheat may be expected in this country generally. Barley is light upon the ground, and a smaller breadth; the drought of April has tended much to render it generally light. Oats are but short, but beans are pretty good. The hay crops as well as the clover are exceedingly light—the latter are all but a general failure; in every crop we have seen, except on recently cultivated lands, it is stunted and patchy, and leaves the soil not only in a bad state for the subsequent crop, but also fills the land very full of quitch. Hay making is just commencing. Some persons cut a fortnight ago, and caught a few flying showers, sufficient to prevent their securing the hay, but not so much as to totally spoil it. The grass is generally quite ripe, but both thin and short, and the stocks of old hay being well eaten up, it is probable that it will be in good request, but may be checked by the good prospect for turnips. Early planted potatoes are generally well grown, and a full crop, later sown have suffered much from the dry rot: an average produce can scarcely be calculated upon. Tares are generally good; the late rains have induced a second growth, and they have improved rapidly since that time. Markets have a somewhat downward tendency. Wheat sells slowly, and the quantities in market are quite equal and even superior to the general expectations; more readiness is evinced by the holders to sell than was at one time expected, the prospects of the harvest being so promising. Stock sells slowly, though the prices for fat are good and steady. The great exhibition and meeting of the Yorkshire Agricultural Society takes place at York on the third of next month, and one of the best shows is expected that the Society ever had. A most stirring time is anticipated.—*July* 16, 1842.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF JULY.

Having experienced a month and upwards of exceedingly favourable weather, we are happy to say that the improvement in appearance, at all events, in the fields since our last review of the state and prospects of the corn trade, is very considerable; indeed, much more so than could have been anticipated when our last Magazine went to press. To spring-sown wheat it has been of the greatest benefit, and although the quantity cannot be materially increased by this favourable change in the weather, still, should the gathering season only prove to be propitious, the quality of the new wheats, we have strong grounds for anticipating, must be of an unusually fine description. In quantity, however, we apprehend there must be a deficiency, for the straw is stunted, and in a certain degree injured by the previous unfavourable state of the weather, and, as we said in our last number, the plants are unusually thin on the ground. Fine quality, however, may still be a material advantage to the farmer; and this benefit he has, at all events at the present moment, the prospect of reaping from his coming wheat crop. From the inferiority of his crop, however, of last season, the farmer has, during last month, been subjected to a considerable loss by a large competition of Polish wheats in all our large markets of consumption. In the beginning of July, the duty payable on foreign wheat when entered for home consumption had been reduced to nine shillings per quarter, and two weeks afterwards to eight shillings per quarter; and as the importers did not anticipate any decline lower than six shillings per quarter taking place till the result of the ensuing wheat crop became more manifest, large quantities of the finest Dantzic wheats were entered at nine shillings and eight shillings per quarter, and sold ex ship; the expense of landing under lock in a material degree making up the difference betwixt the duty actually paid, and that which might have been chargeable after some delay. The pressure of these wheats on the markets from necessity have rendered the sale of British-grown wheats most difficult at their former value, and thus have British farmers been again injured by the introduction of foreign wheats into home consumption, at a time, too, when prices were extremely moderate, and when no foreign supplies were required. Under these circumstances, no interest in the British community can reap any benefit from the great quantity of foreign wheat which has already been imported, and which must continue to be imported during the remainder of this corn season. This is the commencement of the bad consequences of the new corn law, and, until it be repealed, under no possible circumstances can the British wheat producers meet, in our own markets, the foreign proprietors of the best Polish wheats. The scale of import duty is no adequate protection to the British farmer. At this time, for instance, when the average price of British wheat is only 63s. to 64s. per quarter, the best high-mixed Dantzic samples may readily be sold at 74s. per quarter; and thus it must be apparent to all who are not blinded by prejudice or by self-interest, that a duty of 8s. or of 9s. per quarter is no protection whatever to the English landed proprietors, nor to their tenantry. To the consumers themselves, the use of foreign instead of home-grown food is equally as detrimental as it can be by any means to our own agricultural interest, in as far as the employment of foreign instead of our own labourers in the production of food must tend, in a very extensive manner, to reduce wages in this country. But the greatest injury which this free trade in foreign corn—for the new corn law now renders it virtually free—will speedily be found in the large money remittances which must be continually made for its payment, by which the means for productively employing our population will be more than proportionably curtailed. A barter trade—an exchange of British manufactured goods with foreign food—is utterly impracticable. It must be a theory, indeed, as wild as any that ever entered into the human imagination, else we would now be reaping from it all the great advantages predicted by its supporters. During the last four years, the foreign corn trade has to all purposes been perfectly free; and yet we hear of no increase either in the quantity or in the value of British manufactures exported during that period to those kingdoms, empires, and states, from whence we have been such large importers of agricultural produce. With them there has not been, nor is there yet, even the slightest appearance of what is called reciprocity in trade. The wheat imported has not been paid for in manufactured goods, nor in any article by which the productive labour of the people in these Kingdoms can be in any manner extended; but on the contrary, it has been paid for chiefly in hard money, which can, by no effort of commercial dealings, be ever drawn back again from these foreign states into this country. Those, to whom these twenty or thirty millions sterling have, during the last four years, been remitted, are employing their much increased wealth, much more naturally and likewise far more profitably to their native country and to themselves than in dressing their serfs and boors in Manchester or Leeds manufactured goods. They are investing their additional property in agricultural and commercial improvements at home. They are extending their means for annually shipping larger quantities of food to this country; and they are introducing manufacturing labour amongst their own countrymen to save them the expence of employing British labourers to effect objects which can be obtained from the labour of their own people. This, we presume, is true wisdom; for no community nor individual can ever extend his wealth by employing others to do that which he can easily perform himself. Had the weather, during the last four years, been propitious to the crops throughout the United Kingdom, and had our crops proved during those years to have been abundant, the partial distress at present so much complained of, never could have existed. The money, which bad seasons unfortunately had compelled us to remit for grain, received from foreigners, would, under more favourable circumstances, have been expended amongst the farmers within the United Kingdom, and would by them have been circulated amongst all classes in our society at home. The home consumption of all articles would have been annually on the increase, and all the industry of the country would have been fully and profitably employed; the master manufacturer would not have been forced to overstock the colonial and southern markets with goods, which the home trade, under the depressed circumstances of agriculture, could not find the means to consume, and immense commercial losses would thereby have been avoided. When the Empire is again rendered independent of foreign nations for supplies of food, and when our own fields produce in abundance all the necessaries and some of the luxuries of life, under laws of protection to money, talent, and industry employed in every department of production, and certainly not till then, can prosperity again rear her head amongst the people, and no real distress will in all probability afterwards be found amongst them. Under the new corn law however these benefits can never be obtained, for under no circumstances can an abundant crop of wheat grown in the United Kingdom hereafter exclude the best qualities of foreign wheat, imported under the influence of this law, from our markets of consumption. The maximum duty of 20s. per quarter, offers no guard against competition in this article, for the superiority in quality over our average qualities pays, as we have already shewn, more than one-half of our highest duty; and prices in the ports of shipment will always be regulated by the quotations from, and by the prospects in, Mark-Lane, so long as the present corn bill is permitted to decorate the statute book of the United Kingdom. The foreign corn trade for the future, in fact, may be considered as entirely free, and our home corn producers, consequently, must in future labour under much greater uncertainty in all their agricultural operations than they ever did under the late corn law, imperfect, as no doubt it was, in various parts of it. It is already as clear as any demonstration can be rendered, that the great body of consumers can reap no advantage from the consumption of foreign food, even should the value of it be reduced to one-half of the cost of the same description of provisions grown at home; because the wages of labour always are regulated by the expences of living generally, and as the employment of foreign labourers in the production of food for the inhabitants of the British Empire must very materially add to the number of workmen in idleness at home, the wages to be paid to them must not only be reduced in proportion to the reduction in the value of living, but they most certainly must be also still farther reduced by the increased number of workmen who, under these circumstances, must be offering themselves for employment, after transferring themselves from the agricultural districts to those of manufacture and of trade. Bread then at even one penny per pound would be dearer than under home protective laws; it would be at two or even three-pence per pound, because the means to pay for it by the great body of the consumers would be proportionably restricted; and these means must annually be more and more limited, in proportion to the quantity of the precious metals annually abstracted from the commonwealth, in payment for food raised entirely by foreign labourers, and imported here, in a certain measure, by foreign seamen, sailing in foreign built ships, and navigated under the foreign flag. It would surely be far more advantageous to the British people to protect by legislative enactments the property of those who are willing to embark capital in internal improvements as well commercial as agricultural. Was the vast amount of money paid away to foreigners during the last four years, now employed in the conversion of barren lands into corn fields, only few years indeed could pass away before the industrious classes would be again well employed, and the cultivation of the fields be so considerably improved, as to render the importation of foreign food to any extent afterwards for their support unnecessary. In the waste lands in Norfolk and Lincolnshire, for instance, capital and enterprise are at present alone wanted to raise the new county of Victoria from, we may say, the waters themselves; but without proper encouragement from the legislature, unless the produce of the reclaimed lands be moderately protected in our home markets from the growth of foreign fields, these vast national improvements can never be even undertaken; for who will be so exceedingly patriotic as to invest his property in any quarter, wherein there is not a moral certainty of profitable returns being the ultimate consequence of his operations? The late alteration in the corn law is the true way, at all events, to place an effectual bar to the future conversion of waste fields into cultivated lands throughout the United Kingdom; but to those tenants who have already embarked large sums of money in their farms, under the faith of the protection afforded them by the last corn law not being withdrawn from them, the substitution of the present corn law for the one to which we have now alluded, is in the highest degree unjust. The sacrifice of a part, at least, if not of the whole of the money invested in their leases, must, we fear exceedingly, be one of the advantages which the people in general may possibly reap from the late uncalled-for alteration in the corn laws. To be sure, the manufacturing labourers may at first obtain their provisions cheaper, but the cotton lords must immediately afterwards suffer proportionably in the loss of that important branch of the home consumption trade, which the prosperity of agriculture has heretofore universally kept in a state of profitable activity. A reduction to the lowest possible point in the wages of their workmen must necessarily be effected by the master manufacturers to redeem, in as far as they can, the losses to which they will be subjected by the reduction in the value of agricultural property, for which they have laboured with so much praiseworthy perseverance, and which they have unfortunately, even for their own future prosperity, succeeded in effecting to a considerable degree. Still, however, from the present appearance of the wheat crop, we doubt exceedingly whether the average prices of wheat can be materially lower before the close of this year. In all the great wheat districts there exist certainly strong grounds to believe that the quantity will be under an average produce, although should the harvest months be propitious the quality will be fine, and may in some measure supply the deficiency in quantity. Fine quality, however, must be attended by higher prices, and, consequently, by a reduction in the rates of duty now payable on foreign wheat when entered for home consumption; thus will an additional spur be given to foreign importations of wheat for consumption in this country, and thus, by some strange fatality, will we continue to employ foreign land and to pay foreign labourers for the growth of various descriptions of agricultural produce, which can be easily and abundantly obtained by placing our own workmen productively into our own fields, by paying them at all events living wages, and by drawing them away from both penury and idleness, into which many of them must speedily merge, should this preference of foreign over home industry continue long to receive the sanction of the British legislature. The British farmer in fact is placed at present in a most unsatisfactory position; he must continue to pay his rent and taxes, but he is at the same time perfectly in the dark how he can effect these objects with due attention to his own property embarked in his farming operations; and before long we strongly suspect that the same policy must increase the distress now so generally complained of by ship-builders, manufacturers, and tradesmen of all denominations. Already, under our new Custom-house Bill, have numerous articles of foreign manufacture been entered at our Custom-houses on the payment of duties so low that our own workmen cannot meet these foreign goods in our own markets on anything like equal terms. From Russia, for instance, large shipments of manufactured hemp have been already made, although Russia receives not one manufactured article from us. Our home rope-makers cannot work nearly so cheaply as the Russians do, and the natural consequence must be the discharge of a part, at all events, of their workmen. Already, also, at least one-third of the gentlemen of England are decorated with French hats, and French boots and shoes, and the English ladies, we may say, are now universally clothed in French dresses. We could wish the first minister of the Crown to point out one benefit which any of the industrious classes in the British Empire can gain from this system of national liberality, and we will show twenty evils which must be its most natural consequence. To permit foreign wheat to be entered here for consumption on the payment of the nominal duty of 1s. per qr. can have no other object in view than the encouragement of foreign agriculture and the depression of our own. Even was the duty of 8s. per qr. the minimum one, it would be detrimental to our own agriculture, but at the same time it would be beneficial to the British revenue. Should the weather be propitious for gathering the wheat crop, as we have already mentioned, in every probability the quality will be superior, but the quantity inferior to that of last year. It is perfectly well known that the quantity of old wheat of home growth never was smaller at this season of the year than it is at the present moment; and if our supplies hereafter are to be large, they must be of foreign production. The prices of foreign wheat however are not included amongst the averages by which the duty on foreign importation is regulated; and should the quality of the wheat now in our fields be of a superior description, foreign wheat will be admitted in a short time after the new crop comes to market, at duties, we strongly fear, considerably under the present rate of 8s. per qr. This is as great an injury to our agricultural interest as is the admission of French and foreign manufactures at a low rate of duty to all the industrious classes within the British Empire. It is a great sacrifice made to theory, and not one practical benefit can arise from this previously unheard-of system of liberality. It puts a total stop to the conversion of our waste lands into cultivated fields, and few will be brave enough hereafter to risk their property in the further improvement of fields already in a high state of cultivation, but which are capable of producing still double the crops now grown on them, if the experimental farmers do not find in the law proper protection to property embarked in such most patriotic and important operations. Under legislative protection the present produce of the fields in the United Kingdom may eventually be doubled, and the population may likewise be doubled and no distress be found amongst them. Although our modern legislators, however, perceive not the injury which their liberal policy is doing at home, still foreign nations shew no ignorance of the numerous advantages which they must soon reap from the alterations lately made in our commercial laws. From the United States of America intelligence has been received dated in the middle of last month. In expectation of a change in our corn laws, an unusually large extent of land had been put under wheat tillage, and as the season had been and continued to be extremely favourable, it was calculated that the Union would produce this year a third more wheat of the finest quality than it had ever done before. That portion of the Union which bordered on British North America will also be much benefited by its locality to our possessions, for it will enable the wheat growers to send a part of their produce here for consumption on the payment of colonial duties. Large establishments for the extension of the milling trade were in progress everywhere, we may say, throughout our American possessions. Large quantities of wheat, the produce of the United States, will be sent across the border, will be converted into Canadian flour, and entered for consumption in the United Kingdom on payment of colonial duty. Our shipping interest, however, will have the advantage of the carrying trade of this American Canadian flour, for it cannot be imported here unless under the British flag. Our home wheat growers may also confidently calculate on their property being met in our markets during the ensuing corn season by unusually large supplies of wheat and flour, made direct from various quarters in the United States themselves, independent of that quantity which will be smuggled into this country in the character of Canadian produce.

For the old crop prices were then fairly maintained everywhere in America, and the supplies continued equal to the demand. Shipments to a considerable extent continued to be made to Europe, but the American millers must cease to mix Indian corn with wheat before confidence can be placed in the good baking qualities of American Flour. From our American colonies the letters received since our last publication are in due course of post. The crops there promised great abundance, and the relaxation in our corn law duty afforded much satisfaction to all the agricultural settlers. Considerable shipments of wheat and flour had already been made to the United Kingdom, and many others would follow before the old stocks of grain were exhausted. In short the accounts from all parts of North America are favourable and cheering to all, excepting to the British agricultural interest, and to the British productive labourer. Their property is already interfered with, and deteriorated in value by the preference even already given to foreign produce and to foreign handicraft; and these evils must annually now be on the increase. We doubt much whether the members of the Corn-law League themselves, when their finances become even less than they are at present, do not change their tones very speedily, and be as loud in calling for protection to British industry, as they have now, since their formation, been vociferous in demanding freedom of trade. The people generally repudiate the doctrine of employing foreign instead of British agricultural labourers. These gentlemen heretofore have been unable to get the steam up even amongst the manufacturing labourers themselves, and they are hearkened to only as curiosities, who may afford the people in their leisure hours a certain fund of amusement. We are certain that, before long, they may improve their finances, and have larger numbers of intelligent admirers, by assuming the characters of protectors of British labour than they now have in advocating the cause of the cotton lords at the expense of the industry of the United Kingdom. In as far as our future intercourse with the United States of North America goes, there can be no barter trade. The Americans are a wise people in their generation, for somehow or other they prefer the *assistance* of American helps to the *employment* of British workmen; they protect native industry in all its departments. Their wheat growers are most effectually protected in all the American corn markets by law against wheat of foreign growth. To their dairy farms the laws pay equal attention. Whilst, for instance, in England, American cheese is admitted on the payment of the small duty of about 1d. per lb., on English cheese the American duty is upwards of 6d. per lb. before it is admitted into consumption. It is impossible, therefore, to believe that any reciprocity in trade can ever be established betwixt us and our transatlantic brethren, until the latter make a radical alteration in their internal polity, and no concessions which we can make to them in trade, can by any possibility be attended by this result. We are, therefore, by our new commercial laws encouraging the cultivation of foreign fields, the employment of foreign labourers, and the navigation of foreign ships at the expense of the best interests in the United Kingdom. From the information which we have received from the large corn markets in the Black Sea, in the Mediterranean, and up the Adriatic, which is dated in due course of post, we can only draw similar conclusions. In Trieste, and in the other commercial towns in the Adriatic, the corn markets had been dull latterly, because the prices of the best qualities of Banato and other wheats had been hitherto held above their comparative value with those to be obtained for the same descriptions in Great Britain. The holders, however, were at these dates becoming more moderate in their sentiments on this head, and some quantity of soft Danube wheats had consequently been disposed of for exportation. The appearances of the new harvest had become much more favourable than the previous rumours respecting it, and there would be a most abundant supply for exportation should these favourable opinions be confirmed about the close of the present year. From Venice, Ancona, and indeed from all the other ports in that sea, the accounts are equally favourable; and if our supplies from them should, after the turn of the year, not be plentiful, the circumstance must originate in the want of the precious metals on our part, and not in any deficiency in the stock of wheat on theirs. From the lower ports in the Mediterranean the mercantile letters contain information equally pleasing to those gentlemen in this country who desire to see our corn markets filled with wheat of foreign growth. In the Italian ports, the demand for wheat contined to be extremely dull, because, excepting for England, no export demand at these dates existed. A great improvement had been effected in the crops by the favourable alterations which had lately occurred in the weather. Abundance in quantity and superiority in quality were consequently very confidentally calculated on. In the Marseilles market no animation existed in the wheat trade at our latest dates, and the export demand had ceased entirely, except a few shipments which were occasionally making to Great Britain, at rather moderate prices. All fears respecting the state of the crop in the south of France had most happily been removed by the great improvement which had occurred there in the state of the weather. The produce of the harvest was abundant, and the quality generally was also considered to be excellent.

It is useless for us, in this number, to place before our readers the intelligence respecting the grain markets, which has been received from Tangarok, Odessa, and the other corn shipping ports in the Black Sea, nor that from Alexandria, in Egypt; for it would only be a repetition of the information which we have given above on the most important subject of the corn trade, rendered now doubly important by the alteration which has latterly been effected in our corn, and generally in our foreign import duties.

From the different ports of shipment within the Baltic Sea, letters of the latest dates advise a regular demand for wheat for exportation to the United Kingdom. In Dantzig large shipments of Polish wheats had been made to this country; and so long as the season permitted, there is every prospect that these shipments must continue to be followed up by others equally abundant. The cost price free on board was rather moderate, and the freights, particularly of large ships, extremely low. These speculations must pay fairly, even were our minimum import duty 8s. per quarter. The importers, however, we think accurately too, calculate on a still farther reduction in the rate of the import duty occurring before the next crop of wheat can be brought regularly forward into consumption, and this event, should it occur, must still farther improve their profits. At Elbing, Konigsberg, and the other places of shipment in that neighbourhood, the news is necessarily of a similar description. Prices were in all of them fully supported, and shipments continued to be freely made at unusually low freights. From Rostock and Stettin, and the ports nearer the mouth of the Baltic, activity in the corn trade continued to prevail. The supplies of Silesian wheats were not over abundant either there or in Hamburg; and the finest qualities of this description, and of Pomeranian, continued in demand, and obtained rather high prices than otherwise. Of barley and of oats shipments continued to be made to this country from all the ports within and without the Baltic, to a considerable extent, and at prices which in the present state of our markets can scarcely be called moderate. To this country, however, large supplies of foreign spring grain and pulse will be forwarded during the next corn season, whatever may be their value here, and farther injury must thereby be inflicted on our farmers, and on the agricultural interest in general. A new trade in agricultural produce has likewise made its commencement this season betwixt us and these ports. A large quantity of cured hams, pork, and dried and pickled beef has already been shipped to us from many quarters, on the invitation of the reduction which has been made in our custom-house duties. The agents of the large butchers in London have also already taken their passage to purchase fatted live cattle in Holstein, with gold in their pockets for the payment. This trade, however, is only in its infancy; but time, and that only of a short period, will increase it far beyond the present calculations of British modern statesmen, for it will gain strength as it progresses, and eventually become formidable to our cattle growers.

The Barley trade has continued during the month which has just passed away, in a state little satisfactory either to the home grower or to the consumer. The supplies, as is very naturally the case at this time of the year, have been unusually small, although at the same time they have been fully equal to the demand. In common seasons at this time of the year, the maltsters generally have been induced to purchase with freedom, with a view to the commencement of their next malting operations, but of this channel of consumption the home barley growers have been this year, to a certain degree, deprived. The uncertainty which the late alteration in the corn laws has created respecting the future value of barley throughout all the large markets for its consumption, is the chief, if not the sole cause for this effect, and it is generally detrimental to British and Irish producers of every denomination. Could the barley trade now be conducted on the common principles of former practice, the present appearances of the barley fields would have materially altered this very dull state of the trade, but theoretical doctrines have of late been introduced in place of those of experience, and their effects must be known before this trade can again become healthy. Neither the maltster, the distiller, nor the barley farmer know how to act, until knowledge be gained by them of the probable effects of the reduction which the legislature has latterly effected in the rates of those import duties which had previously been most wisely imposed for the protection of our home barley growers against the interference, in our markets, of foreign barley land proprietors. The future value of barley has been rendered more than usually uncertain by this cause, and consequently neither the buyer nor the seller know what value at present to affix to it. At home the appearances in the barley fields of the next crop are not very brilliant. The quantity of land under this description of tillage is considerably less than usual, and complaints are made of thinness on the ground, and also of the straw being too much stunted, and too short for the production of heavy ears of grain. Any deficiency, however, which may occur in our barley crop, there is every reason to believe will be amply made good by the abundant supplies which under these possible circumstances must, from necessity, be imported from foreign nations under the reduction of import duties which the new corn law has already established. We decidedly hold that the maximum duty of 11s. is not sufficiently high for protecting the farmers on light soils, where the best barleys are produced. The average price of 26s. per qr. can never remunerate the grower of malting barley, weighing 52 to 54lbs. per imp. bush. This article is only one-third lighter than wheat, is as costly in its cultivation and reaping, and fully as valuable, considering the important purposes to which it is applied. The maximum duty of 20s. 6d. per qr. on wheat commences at the average price of 51s. per qr., and, on the same rule of weight, the maximum duty of 11s. per qr. on barley should have been imposed when the average price of barley was 31s.—not 26s., as is the figure put down under the new corn law scale of duties. But it is perfectly useless now for the agricultural interest to complain of the injury inflicted on them by the late violent alteration in the corn duties which has most unfortunately for the community been effected. It is now the law of the land, and, until it be either repealed or modified in its character, submission is the duty of the people. Amidst the numerous reductions, however, which have during this session of parliament been made in the duties previously chargeable on various articles of foreign manufacture when introduced here for home use, it must appear to be a most extraordinary oversight on the part of the Chancellor of the Exchequer not to have applied his pruning knife to various taxes which are collected by our excise office. In this quarter he would have found far more extensive means for the amendment of the public distress than in the new custom house tariff. Here he might have conferred great benefits on the empire without injury to one interest amongst our society. He had only to have directed his attention to the barley fields throughout the United Kingdom, and he would instantly have discovered one great channel, indeed we may say the greatest, for giving immediate relief to millions of her Majesty's subjects. He would have discovered that, exclusive of the interest annually paid on the national debt, the duties levied on manufactured barley pay more than one half of the public expenditure. Of the amount paid annually into the treasury from this source, neither the barley producers nor the manufactured barley consumers complain. On the contrary the annual barley revenue might be much and advantageously increased if the Chancellor of the Exchequer would sanction an alteration in the present rules and manner of its collection. If he would, only for the shortest period, direct his attention to the injury done to the public revenue by the many millions of gallons of foreign spirits, of the worst quality too, which are annually smuggled into England for the consumption of the English people, to the ruin of their morals, and to the destruction of their constitution, and afterwards think about a remedy, he would find an ample one in the reduction of the extravagant duty at present levied in England on home-made spirits. This duty no consumer will submit to pay, who can obtain even deleterious foreign spirits free of duty. In Ireland and in Scotland, where the home-made spirit duties are within moderation, internal illicit distillation has for years now been entirely suppressed, and smuggling from foreign countries is nearly unknown. We are persuaded, that a small increase of the duty now charged on home-made spirits in these two divisions of the British Empire, could not reintroduce smuggling into either of them. On the contrary, it is far more than probable that, to equalize the spirit duty throughout the United Kingdom, to fix it at 5s. per gallon for instance, would banish the spirit smuggler's trade from England, and would cause duty to be paid on several millions of gallons annually more than is collected under the present system. To the Chancellor of the Exchequer however this alteration in our excise laws ought to be in the extreme pleasant, for it would considerably increase the sum, now annually paid into the revenue, drawn from home-made spirits. The valuable trade of the British distiller would also, by this change in the law, be immediately placed on a solid foundation; for in the home markets he would no longer meet with any opposition from the illicit importer of spirits from foreign nations. It would likewise require at least half a million of quarters of British grain, in addition to the quantity now used by our home distillers, to make good the deficiency in the supply of spirits, which would be the necessary consequence of the suppression of the demoralising custom of smuggling spirits from foreign states. But it is in the malt duty, as it is at present charged, wherein the finance Minister might have found a most important source for the relief of, at all events, a considerable portion of the existing public distress. Nothing can be more true in finance than that excessive taxation is always injurious to the public revenue, and never has this fact been better illustrated than in the history of the British malt duties, as imposed on various occasions. Whenever the charge has been high, the payments into the Treasury have been small; and when they have been reduced to moderation, the receipts have been greatly increased by the natural increase which moderate prices occasion in consumption. During the last four years the quantity of barley converted into malt has been yearly on the decline, although the population has been annually on the increase, and this decline can solely be attributed to the excessive rate per quarter of duty now chargeable on malt. To reduce the malt duty to 1s. per bushel, would in a few years double the quantity of barley now used by the maltsters, and would do much more than double the quantity of sound and wholesome beer consumed by the people, under the existing most impolitic system of charging too much duty per quarter on barley when converted into malt. Let only the malt duty be reduced to 1s. per bushel, and that on home-made spirits be fixed at 5s. per gallon throughout the United Kingdom, and then the additional quantity of barley which the maltsters and distillers would require, would cause at least two million of acres of new and sandy soils to be brought forward into cultivation, we may well say, from the wilderness, and thus vastly add to the wealth of the commonwealth, an increase of riches which would eventually more than pay double the expence which the increased consumption of barley would occasion; but until the liberality and reciprocity system with foreign nations explode, we greatly fear that our internal sources of real wealth—and they are boundless—cannot be explored.

The oat trade has exhibited very little animation in any of our large markets of consumption, since our last review of it. The supplies from the coast and from Scotland during July were moderate in quantity, and of various qualities. Fine samples underwent very little alteration in their value, but scarcely any vitality now remains amongst the general consumers of inferior samples, and the factors generally have been obliged to accept of very low prices, to effect sale to any extent. The arrivals from Ireland have been of the inferior description, nearly generally, and the great part of them have been sold at prices which may truly be said to be nominal, in as far as the interest of the Irish farmer is concerned; for, after deducting the expences of preparation for a long voyage—those of shipment, freight, and charges from the ports of the west coast of Ireland to London, and to the eastern coast of England, and factorage paid in the place of sale—from the low prices at which they have been sold in Great Britain, very small indeed must be the share which falls to the Irish producer. To add to this rather unsatisfactory state of the oat trade in all our markets at home, the importations of foreign oats have been large, and are on the increase. The present import duty on this article is, therefore, not sufficiently protective to the interests of the British agriculture, for large quantities of these oats have already been entered for home consumption. The freights from Bremen, Leer, the Erus, and indeed from all the ports of shipment on the opposite coast of the Continent, little exceed 1s. per quarter, in some cases even less; but this is of little consequence, for the original prices paid for this article at home are generally much lower than it can be produced at, even by Ireland herself. The very natural inference, therefore, to be drawn from this state of the oat market is, that a gradual decline in the production of oats at home must annually occur, and eventually be the cause of the gradual decay of agricultural improvements in the sister island. Whilst this foreign oat trade is on the increase, the employment of British ships becomes weekly more difficult. The carrying trade of foreign oats is nearly exclusively occupied by small foreign ships, built by foreign ship-carpenters, navigated by foreign seamen, and sailed under the foreign flag. The importers of grain, who are acquainted with their profession, never introduce into this country grain excepting it be of a superior quality, and accordingly at present the great proportion of the foreign oats already entered for home consumption have been sold at the highest prices to be obtained for the best qualities grown within the British Empire. The average price of our home growth is usually from 4s. to 5s. per quarter lower than the price to be obtained for the best qualities sold in the public markets; and this difference in value, added to the difference in freight, will generally pay the duty charged here on foreign oats, whatever that duty may be. We are daily informed by the modern political economists, that we have a superabundant population; and yet the whole of their policy, which has, most fatally for the best interests of the British Commonwealth, been in part adopted by the

British legislature, tends to the substitution of foreign for British labourers. The system will last so long as we have hard money to pay for foreign labour, but not one year afterwards. We can produce within ourselves, at all events, oats in abundance, indeed more than the consumption can naturally require; and the alteration in the corn law, in as far as oats are concerned, was, to say the least of it, entirely unnecessary. The crop of this article now in the fields has been wonderfully improved by the very favourable change in the weather which occurred some time ago, and of the continuation of which till the harvest be entirely secured, there is, at the present moment, the brightest prospect. In quantity the oat crop may not be abundant, but the quality will be excellent. In Ireland the ground under oat cultivation this season is not so extensive as formerly, but still the produce will be fully sufficient for all our natural wants without any foreign aid.

Of the potato crop we believe that it is impossible to speak too favourably. The old crop has already been entirely superseded by the new one. Prices are already extremely moderate; purchases of excellent qualities being made already by the pound, even at somewhere about one farthing for that weight. This root is now of immense importance to the entire British and Irish population. Indeed, we may almost say that it is of more general utility than wheat itself; and, amidst the general gloom, therefore, it affords us extreme gratification to be able to report most favourably of an article of such vital consequence to the whole of the community, whatever may be their rank in British society, as potatoes now most undoubtedly are.

CURRENCY PER IMP. MEASURE.

JULY 25.

	Per Qr.		Per Qr.
WHEAT, Essex and Kent, red ..	62 68	White	66 69 72
Irish	52 56	Do. ..	51 59 62
Old, red	— —	Do.	— —
RYE, old	34 36	New....	36 38
BARLEY, Grinding 26 29 Malting	30 32	Chevalier	32 33
Irish	23 25	Bere .20	21 24
MALT, Suffolk and Norfolk	56 62	Brown..	50 54
Kingston and Ware	56 62	Chevalier	63 —
OATS, Yorksh. & Lincolnsh., feed	23 26	Potato 25	26 27
Youghall and Cork black	18 19 20	Cork, white	22 23
Dublin	20 21	Westport	22 24
Waterford, white	16 17 20	Black ..	17 19
Newry	22 23		
Galway	15 16 18		
Scotch feed	22 24	Potato..	26 27 28
Clonmel	20 22	Limerick	20 23 24
Londonderry	22 23	Sligo ..	20 22 23
BEANS, Tick, new	32 34	Old ..35	40 44
PEAS, Grey	33 34	Maple..	— 34
White	35 38	Boilers .	37 39

SEED, Rape...... 36*l*. 40*l*. Irish..32*l*. 34*l*. per last.
Linseed, Baltic....44 48 Odessa 50
English Red Clover.... — — per cwt.
White........ —
Mustard, White 15 — brown 15 16 per bush.
Tares, old .... 28 30 new 36 44 per qr.
FLOUR, Town-made 59 — Suffolk 47 — pr sk. of 280 lbs
Stockton and Norfolk, 45 —

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	56 60 62		
Hamburg	50 54		
Rostock	48 52		
BARLEY	20 21		
OATS, Brew	21 22	Feed . 14	16 18
BEANS	24 25		
PEAS	23 27		
FLOUR, American, per brl	28 30	Baltic ..	29 —

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, July 22nd, 1842.	s.	d.	AVERAGES from the corresponding Gazette in the last year, Friday, July 23rd, 1841.	s.	d.
WHEAT	65	8	WHEAT	66	3
BARLEY	28	0	BARLEY	32	9
OATS	22	0	OATS	22	9
RYE	38	6	RYE	35	5
BEANS	34	10	BEANS	39	6
PEAS	35	5	PEAS	42	4

IMPERIAL AVERAGES.

Week ending	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
June 10th	64	0	26	8	20	6	31	9	33	1	32	7
17th	63	10	26	10	21	6	36	10	33	9	32	6
24th	63	11	27	6	21	7	31	7	34	4	33	2
July 2nd	64	3	27	7	22	4	32	3	34	9	35	6
9th	64	10	27	5	22	2	29	5	35	1	34	0
16th	65	8	28	0	22	0	38	6	34	10	35	5
Aggregate average of the six weeks which regulate the duty	64	5	27	4	21	8	33	5	34	4	33	10
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	8	0	9	0	6	0	9	6	8	6	9	6
Do. on grain from British possessions out of Europe	1	0	2	6	2	0	1	0	0	6	1	0

PRICES OF SEEDS.

JULY 25.

Baltic	—	—	crushing	44	48	per qr.
Mediter. & Odessa	47	48				
Large, foreign....	—	—				
Clover, English, red	—	—	white	—	—	per cwt
Flemish	—	—	do..	—	—	nominal.
New Hamburgh ..	—	—	do..	—	—	
Old do.	—	—	do..	—	—	
French	—	—	do..	—	—	
Hempseed, small	30	31	large ..	46	48	
Coriander	10	16	old....	16	18	per cwt.
Mustard, brown, new ..	10	15	white..	9	13	pr. bush.
Trefoil, new	18	22	old....	12	16	
Rapeseed, English new..	32*l*.	34*l*.				
Rye Grass, English	30	42	Scotch	18	40	
Tares, winter	—	—	New..	4	5	
Canary, new	80	85	fine	90	95	
Carraway, old	48	52	new	42	44	
Linseed Cakes, English..	10*l*. to 10*l*. 10s.					
Do. Foreign..	7*l*. to 7*l*. 10s.					
Rapeseed Cakes	5*l*. 5s. to 6*l*. 0s.					

POTATO MARKET.

BOROUGH AND SPITALFIELDS MARKETS.

JULY 25.

We have scarcely any old Potatoes on sale in these markets, while no accurate figures can be given for them. New ones are very abundant, and command a ready inquiry at from 4s. to 7s. 3d. per cwt.

WOOL MARKETS.

BRITISH.

JULY 25.

Down Ewes and Wethers	10d. to 10½d.
Down Teggs	11d. to 12d.
Half-bred Wethers	10d. to 11d.
Half-bred Hogs	12d. to 12½d.
Flannel Wool	8½d. to 12d.
Blanket Wool	5d. to 7½d.

HIGH WYCOMBE WOOL FAIR came off on Wednesday, with a very sad countenance, and very thinly supplied; but what there was offered met with purchasers, varying from 1*l.* 1s. to 1*l.* 6s. per tod.

ABINGDON WOOL FAIR was held on Monday week. The quantity of wool pitched was equal, if not larger, than that of preceding years. The trade in the early part of the day was very dull, but before the close several sales were effected. Ilsley Fair being fixed for Wednesday, induced many to take their wool home, and try the chance of a better trade on that occasion. The prices realized were—Ewe wool from 23s. to 25s.; teg do., 26s. and 27s.

KETTERING WOOL FAIR.—The depression of the wool trade was a considerable obstacle to extensive sales on this occasion, nevertheless enough business was done to firmly establish the fair and prove its utility. The prices varied from 26s. per tod, and 1*l.* back in 372 fleeces, to 24s. per tod. The total number of fleeces sold was 4,825. A large party of gentlemen sat down to an excellent dinner at the White Hart Hotel, W. T. Maunsell, Esq., in the chair, supported by J. Yorke, Esq., G. Booth, Esq., Rev. J. L. Sutton, &c. &c. T. P. Maunsell, Esq., M.P., was prevented by indisposition from attending the meeting. A silver cup, value 5*l.*, was presented by W. T. Maunsell, Esq., to Mr. Sharp, of Finedon, the largest purchaser at the fair. He bought 1,506 fleeces; Mr. Barber, 1,110; Mr. J. M. Cole, 1,090; Mr. Smith, 684; Mr. Richards, 435. After many loyal and other toasts had been given, the Chairman announced that a subscription, amounting to eight guineas, had been entered into for a cup for next year, to be given to the largest buyer of more than 800 fleeces.

AYLESBURY WOOL FAIR.—This fair was well supplied with this valuable commodity, which was quickly purchased at prices averaging about 1s. per lb.

EAST ILSLEY WOOL FAIR.—This annual market for the sale of wool was held on Wednesday last, at Ilsley, and in every respect maintained the high character which it has for years enjoyed. The quantity of wool pitched (upwards of 4,000 tods) was considered greater than at any fair for some time past, and although the state of the market is at present by no means favourable, business appeared tolerably brisk, and nearly the whole sold. The following were the prices realized:—Mixed wools 24s. 6d. to 25s. 6d. per tod; ewe ditto, 23s. 6d. to 24s. do.; teg ditto, 26s. do. The silver cup, value 20 guineas (raised by subscription, for the actual purchaser of the largest quantity of wool exposed for sale, and weighed at Ilsley fair, was awarded to Mr. Twycross, of Wokingham. The silver cup, value 10 guineas (presented by H. Hippesley, Esq., President), for the owner of the best Hampshire Southdown Ram, of any age not exceeding six-tooth, was awarded to Mr. Humphrey, of Chadleworth.—The silver cup, value 10 guineas (the gift of F. Villebois, Esq.), for the producer of the best and clearest Southdown teg wool, not less than 100 fleeces, of his own growth, was awarded to Mr. James Palmer, of Weston. The silver cup, value 5 guineas (offered by B. Wroughton, Esq.), for the producer of the best and cleanest Southdown wool, subject to similar conditions, was awarded to Mr. Fidler, of Boxford. The cups were very handsome, and much credit is due to the spirited individuals by whom they are given, for the valuable service they thereby render this important mart.

AYR WOOL FAIR.—The annual wool market established under the auspices of the Ayrshire Agricultural Association, about 5 years ago, was held here on Tuesday last the 19th current, being as usual the 3rd Tuesday of July. The business done by wholesale was considerably less than on former occasions. A good deal was done by retail, but at prices which can afford no just criterion whereby to judge of the real value of the different varieties of wool. The following were the wholesale prices in those instances in which sales were reported:—Laid cheviot, 10s. 6d. and 11s.; black-faced washed and inlaid, 10s.; common moor wool 7s. to 7s. 6d.

LIVERPOOL, July 23.

SCOTCH.—There has been nothing doing in Laid Highland Wool this week, in consequence of the uncertainty of how the fairs may go off in the north; but from the great dullness that has prevailed in the fairs that have taken place, the holders here have given way in price, and we lower our quotations accordingly. The above remarks apply to all kinds of Scotch Wool.

	s.	d.		s.	d.
Laid Highland Wool, per 24 lbs..	7	0	to	7	3
White do. do............	9	0		9	6
Laid Crossed do..unwashed..	8	3		9	3
Do. washed do..............	9	0		10	0
Do. Cheviot unwashed do.	8	6		10	6
Do. washed	10	9		14	6
White Cheviot, washed	18	0		21	0

FOREIGN.

CITY, July 25.—The imports of wool into London last week were 696 bales, of which 595 were from Germany, 73 from Riga, and 28 from Lisbon.

The public sales have been in daily progress since Tuesday, and it is calculated that there will be offered altogether about 14,000 bales. A large proportion, as usual, will consist of colonial. It cannot be said that up to the present time the biddings have been quite so brisk as they were at the last series, though this may arise from the larger quantity to be offered, and matters may improve as the sale proceeds further. The attendance even now, however, is very good, and all finds buyers.

Messrs. Southey and Son offered on Tuesday last 1160 bales, 465 of which were Van Dieman's Land, 370 Port Philip, 184 Australian, 133 South Australian, and 8 Cape of Good Hope.

The Van Dieman's Land went at 10d. to 1s. 7½d. for sheeps', at 1s. 1d. to 1s. 9½d. for lambs, at 5½d. to 1s. 1½d. for locks, and at 8½d. for samples in the grease. The Australian sold at 9d., 1s. 4d., and 1s. 6½d. for sheeps', and 8½d. to 9½d. for unwashed; the Port Philip at 10d. to 1s. 6d. for sheeps', at 1s. 2d. to 1s. 6d. for lambs, and at 7½d. to 8d. for parcels in the grease. The South Australian went at 1s. 0½d. to 1s. 4d., and at 1s. 4½d. per lb. for washed lambs. The Cape realised 1s. 3d. per lb.

On Wednesday the same brokers put up 1190 bales, viz., 986 of Van Dieman's Land, 85 of Australian, 55 South Australian, 30 of Port Philip, and 34 of Odessa Merinos. The Van Dieman's sheeps' brought 11d. to 1s. 7½d., the lambs 1s. 3½d., to 2s., and the slipe 1s. 1½d. to 1s. 2½d.; the Australian sheeps' 1s. 5d. to 2s., and the South Australian 11d. to 1s. 3d., samples in the grease 7d.; Port Philip sheeps' 1s. to 1s. 4½d. and Odessa Merino 1s. 7d. to 1s. 8½d. per lb.

The sale of Thursday was by Messrs. Lord and Hall, who put up 1275 bales, comprising 653 bales Australian, 347 Odessa, 213 Spanish, and 62 Buenos Ayres. The Van Dieman's Land sheeps' wool obtained 1s. 2d. to 1s. 4d; the lambs 1s. 5d. to 1s. 5½d.; the samples in the grease 8½d.; the Sydney 1s. 3½d. to 1s. 6d. for sheeps'; the Port Philip sheeps' 1s. 0½d. to 1s. 7d., and the lambs 1s. 4½d. to 1s. 5d.; the Odessa 1s. to 1s. 1½d.; the South Australian 1s. 1d. to 1s. 2½d.; the Spanish 1s. 1½d. to 1s. 5d.; and the Buenos Ayres, 3½d. to 6½d. per lb.

On Friday Messrs. Simes and Co., had a sale of 1534 bales: 382 being South Australian, 810 Van Dieman's Land, and 342 Port Philip. The South Australian brought 9d. to 1s. 3d. for sheeps; the lambs 8½d. to 1s. 3d.; the Van Dieman's Land sheeps 11d. to 1s. 8½d.; the lambs 1s. 0½d. to 2s. 2½d.; the Port Philip sheeps' 11½d. to 1s. 4½d.; the lambs 11½d. to 1s. 9d.; the samples in grease 7d. to 1s. 1½d. per lb.

On Saturday the same brokers put up 1459 bales, 987 being Australian, and 472 Van Dieman's Land. This sale went off well, like the above.

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THE FARMER'S MAGAZINE.

SEPTEMBER, 1842.

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PLATE I.

A West Highland Cow, the property of Mr. Grant, of Ruthven, Banffshire, to which the first Prize was awarded at the Meeting of the Highland and Agricultural Society of Scotland, held at Aberdeen, October, 1840.

PLATE II.

ATTILA; Winner of the Derby, 1842.

(For Description see page 184.)

ON THE APPLICATION OF THE PRINCIPLES OF VEGETABLE PHYSIOLOGY AND CHEMISTRY TO AGRICULTURE.

BY HENRY R. MADDEN, M.D., PENICUIK.

[Twenty-five Sovereigns.]

(From the Quarterly Journal of Agriculture.)

This most important question having been propounded, for the purpose, as we believe, of obtaining a concise statement of the actual present condition of the science of agriculture, or, in other words, an account of what it has done, and what it is likely to effect, we purpose, in the following pages, to bring together, in as distinct a manner as possible, the facts which have been given to the world by those philosophers who have devoted their talents to the sciences referred to; noting particularly the practical bearing of each.

In reply to the former part of the question, namely, What has science already done for agriculture? we say, that hitherto she has been almost exclusively occupied in searching for explanations of the facts long since discovered by practical husbandmen.

Those farmers whose attention has been called of late towards the importance of science, have fallen into grievous error by overlooking the real state of the case. They have continually put the questions, Why should we attend to science? What has it ever done for us? In what respect has our agriculture hitherto been *improved* by the labours of the chemist? And because a very satisfactory answer cannot readily be given to the above most unfair interrogations, they at once lay aside the subject, fully resolved to give no heed to such "foolish prattling."

Three very excellent reasons can be advanced in explanation of the fact, that as yet science has in so few instances outstepped practice.

First, It appears to be completely forgotten that practical husbandry has engaged the undivided attention of a very large proportion of the inhabitants of every civilized country for a very long series of years; whereas scientific agriculture has been investigated by an extremely limited number of individuals, and scarcely at all examined until within the last century; nay, very little was done prior to the commencement of the present. How could it be expected, we may ask, that science, however rapid its advances might be, should, in half a century, under the guidance of a few separate individuals, not only overtake, but outstrip, as some farmers most unreasonably appear to wish, a practice whose foundation consists of the accumulated experience of thousands of individuals during many hundred years? Surely science cannot be found fault with merely from the absence of such miraculous powers as such a supposition would infer! And those who devote themselves to its study are, of a truth, fully warranted to complain of unfair usage when constantly urged by the farmer to prove what he has done for his benefit, while he feels sure that nothing will satisfy his unreasonable querist short of the exhibition of some *improvement* upon the *present state of agriculture.*

Give us the encouragement we seek, and indeed absolutely require, and we will promise, in a very few years, to be ready to go hand in hand with you in any field of improvement you may desire; but still continue to dishearten us by such unwarrantable demands, and we should not be surprised if the field were again deserted, and another long period elapse in which the agriculture of a country, whose increasing population loudly cries for the straining of every nerve to obtain all that the soil will yield to her beseeching children, would remain stationary, or rather retrogressive, from the dull apathy resulting from disappointed expectations. And whose, we ask, will be the blame? Surely the farmer alone can be answerable for the loss which his own exorbitance has produced. If in his folly he kills the goose, he must learn patiently to endure the want of her golden eggs.

We sincerely trust, however, that nothing of the kind will occur, and in the useful excitement which is at present so evident in the agricultural world, we hope we perceive the dawn of a brighter period, and that the time is nearly approaching when the deep-rooted prejudice, against which we have hitherto had to struggle, is about to fall to the ground, and we shall be enabled confidently to look for support to a quarter whence we have as yet scarcely dared to expect so much as a welcoming smile.

Science can never safely advance until she has laid a sure foundation upon which to build her collected facts; and it is to the completion of this most necessary portion of the fabric that all her most ardent votaries are at present directing their energies. What advances she has already made, we trust the sequel will explain, and in the meantime we shall consider the second reason why the progress of agricultural philosophy has not been more rapid even during the last twenty years.

Secondly, A great drawback to the rapid advance in agricultural science is to be found in the want of confidence exhibited by practical men towards those who are engaged in investigating the theory of their operations. It is now upwards of twenty years since Sir Humphrey Davy wrote his justly celebrated work on agricultural chemistry; and we are not at present aware of one single suggestion of his which has been extensively put in practice. It is true that there are many doubtful and some erroneous statements to be met with in his writings, but still there is much that is really good, and of great practical utility; then why this averseness to experiment?

It is an important fact, which should be carefully attended to when considering the true cause of the little practical use hitherto made of the information obtained from chemists and vegetable physiologists, that almost uniformly when error is to be found in their writings, it occurs in the *practical* portions, and consequently the farmer being led astray by these, too frequently discards the whole as erroneous. Some who read this may perhaps exclaim, "What, then, is the value of their writings? If the practical suggestions contained in them be erroneous, what have we to do with them?" In reply, we would request a careful consideration of the following statement.

A considerable amount of practical knowledge must be possessed by a scientific person before he is fit for applying his researches to practice, and without this necessary accompaniment, he will ever fail of inspiring confidence in his pupils. This was Sir H. Davy's error. He felt keenly the necessity of practical knowledge for the purpose of gaining the confidence of the farmer; but he was too much pre-engaged with *theory* to be capable of studying practice with an unbiassed mind. The consequence was, that he became satisfied with a very superficial knowledge, commented upon each fact *separately*, explained it theoretically, and afterwards, upon this sandy and tottering foundation, erected a scheme of practical improvement. What wonder if a few trials proved the whole to be incorrect? If, however, Sir H. Davy had followed the opposite and safer course, and had proceeded no further than the investigation of the laws of vegetable chemistry and physiology, the result would have been, that no farmer would have paid any attention to the work; nay, they would have expressed surprise if any person had attempted seriously to call their attention to its perusal. To correct this, we would humbly suggest that those men of science, who either have not the inclination or want the opportunity of studying practice, should publish the result of their investigations without any attempt to apply them practically, and these, again, should be employed by the learned and enlightened practical farmer, first for the purpose of suggesting to his mind well-devised experiments, and afterwards to regulate his judgment of the results obtained, and to enable him to come to a true decision as to the cause of his success. Such knowledge as this is most invaluable to the farmer; and, of course, if any person possessed the rare qualifications of being both a true philosopher and one well versed in practical details, the farmer would find in him and his writings a counsellor far surpassing all those who attempt to build up schemes of improvement, founded upon their own untried and undigested speculations.

We cannot be too careful in our consideration of this vastly important subject; because, while on the one hand, we have a right to look for practical knowledge in all those who would attempt to teach farming, still nothing can be more unfair than to cast aside the information given by the chemist, because he chanced to have failed in some of his practical deductions. It is obvious that the want of confidence of which we complain has been misapplied. Instead of looking warily at their suggestions for improvement in the present state of agriculture, they have extended it to *all their statements*, and thus feel inclined to think that, as far as science is concerned, their art is all in the dark; nay, many have declared that, notwithstanding all that chemistry has attempted, agriculture is still, scientifically speaking, a game of chance.

Thirdly, This leads us to remark another circumstance which has greatly tended to retard improvement founded upon philosophical inquiry, namely, the want of scientific knowledge evinced by practical husbandmen. The result of this is, that they continue to direct their endeavours in a wrong way, or misapply the directions laid down for them, and then discard the advice on account of failure which their own ignorance alone produced. We could easily detail many instances of this description, but refrain from doing so, being desirous of occupying as much of our time as possible in laying down what science has already succeeded in establishing concerning agriculture.

The obvious means of rectifying this error is by instructing the youths intended for farmers in those sciences which bear upon their art, so that they may be enabled either to investigate for themselves, or at least be qualified for applying the principles laid down by others engaged in the same field of enquiry.

On looking back at the various improvements made in agriculture during the last 150 years, we meet with many which accord so evidently with the dictates of science, that we should at first be led to believe that in farming operations science and practice had long been familiar friends. If, however, we trace the history of each discovery minutely, we shall perceive that, almost without exception, accident or blind experiment has taken the lead, and the philosophical explanation been built upon the result, so that in this way science has merely given its assent to what practice had already achieved, and not led the way in the path of improvement, as we trust may soon be the case. We felt convinced at first that in the labours of the immortal Jethro Tull we had met with an exception to this rule; but even here a careful perusal of the history of his most valuable improvements convinces us that Tull, as most others, first observed the fact, then tried to discover the explanation thereof, and in doing so was led to profound theory after theory, each coming nearer and nearer to the truth as his continued practice furnished him with accumulated facts for comparison.

If by the question, "what has Science hitherto done for agriculture?" we are to understand which of the new improvements owe their origin to scientific investigation, we feel obliged to confess that as yet we know of none extensively in operation. But if, on the contrary, we are to understand it in the wider sense, as requiring an account of what science has effected towards establishing agriculture upon a sure basis, so that the farmer may be enabled to apply his practical knowledge in whatever situation he may be placed, and will be at once capable of determining what changes in his arrangements, &c., will be necessary if called upon to change his farm, so that his operations will no longer be so much the sport of chance that each farmer can be considered as knowing only the treatment fitted for his own farm, we can confidently assert that much, very much, has been accomplished; and although there is no point upon which we have as yet by any means perfected our knowledge, still there is scarcely any upon which science has not already thrown sufficient light to enable those, who are at all capable of appreciating her services, to derive great benefit and direction in cases of difficulty. To do the subject justice, we must go regularly through the various departments of husbandry, and we shall endeavour to state briefly under each head, what has been effected, and what may be looked for; and while we shall avoid entering into argumentative details, we shall not hesitate to point out what may be considered as still doubtful. We shall treat of the subject under the following heads:—I. *Soil.* Its influence on vegetation, as regards its condition, natural or artificial; under which head will be included, ploughing and harrowing, draining, paring and burning, &c.—II. *Effects of vegetation upon soil*, in which division we shall treat of the various causes which tend to diminish the fertility of the soil.—III. *The art of culture*, or the means necessary for keeping up the fertility of a soil, including manure, fallowing, rotation of of crops, &c.—IV. *The economy of husbandry*, or the particulars regarding each individual crop, which are necessary to be known in order to its successful cultivation.

I. *Soil.* Science has already proved, in the most satisfactory manner, the following circumstances regarding soil:—

1*st*, In order that it may be fertile,

(1.) It must contain all the mineral matters found in the ashes of the plants destined to be cultivated upon it, in such a condition as to be available by the plants, and in sufficient quantity to enable the supply to be kept up by some economical mode of cultivation.*

(2.) It must consist of a due admixture of impalpable matter and larger sized particles, so that it may be porous and easily permeable by air and moisture, while, at the same time, there is a sufficient supply of matter in a state capable of undergoing chemical changes.

(3.) There must be a sufficient supply of organic matter mingled with it, in a state capable of decomposition by the action of air and water.

2*d*, To be fit for profitable cultivation,

(4) It must be free from any mineral substance which is distructive of fertility.

(5.) It must be capable of being reduced to a sufficiently fine tilth, without an undue amount of labour.

(6.) It must either be naturally capable of letting off any excess of water wich may fall upon it, or it must be capable of being made to do so artificially by draining.

(7.) It must possess a structure which will allow the decomposition of organic matter mingled with it, to proceed at a regular rate, being neither so fast as to waste the manure, nor so slow as to keep the dung too long fresh.

(8.) Its situation must be such as to admit of all the operations of husbandry being performed in a proper manner, without occupying too much time; and the climate must permit of the plants arriving at perfection.

3*d*, To be capable of continued cropping, the farmer must endeavour to keep up the essential qualifications of the soil in the following manner:

(9.) It must be ploughed and harrowed, and subjected to any other operations which may be necessary to pulverise it.

(10.) It must have its supply of organic matter, and part also of its mineral ingredients, renewed by returning to it from time to time in the shape of manure, what has been removed in the form of crops.

(11.) It must be kept in an active state, by having fermenting substances added to it at certain periods.

4*th*, To correct any natural faults which the soil may possess, it must be subjected to various processes which have been proved by experience to cure the faults in question; these we shall mention presently, and note under each head what are its effects, and under what circumstances it should be had recourse to.

We shall now explain the reasons for all these requisites, and point out the practical advantages of being intimately acquainted with them; and likewise allude to what science may still effect, so as to increase our knowledge upon each point.

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* In all these statements we shall speak of the circumstances proved by science, as they influence practical agriculture, and not as abstract questions of philosophy.

(1.) In order that soil may be fertile, it must contain all the mineral matters found in the ashes of plants destined to be cultivated upon it, in such a condition as to be available by the plants, and in sufficient quantity to enable the supply to be kept up by some economical mode of cultivation.

The necessity of this condition depends upon the well-established fact, that plants cannot make for themselves any of the elementary substances which they contain, but are only capable of changing the form in which these are combined with one another. Thus, the organic portion of plants, or that which is distructible by fire, is composed of four elementary substances, namely, carbon or charcoal, and three gases, named oxygen, hydrogen, and azote. Now, plants cannot produce any of these four substances under any circumstances whatever; but if they are supplied with them in almost any state of combination, they can, by their vital processes, convert them into starch, gum, woody fibre, or whatever else they may require. The same is the case with the constituents of their ashes. They must be supplied with the requisite elements in some state of combination, and then they will be able to produce for themselves the particular compound which they require.

Farmers have hitherto paid far to little attention to this; they have never been supplied with the information requisite for discovering the substances of which their crops are composed, and therefore they are not capable of judging correctly regarding the results which they obtain; for example, if one sees that a plant will not grow on a sandy soil, he tries it upon clay, and finding it to succeed there, at once feels satisfied that the latter is the soil most fitted for its growth; but another farmer sowing the same seed upon clay land obtains so poor a return that he determines to try it upon sand, and in this instance obtains an abundant crop, so of course is equally convinced that sand is the proper soil for the plants, and that to sow it upon clay is to waste both the manure and the seed. Now chemical analysis would have proved in this instance, that the rocks from which the first farmer's clay and the second's sand were produced, contained a good supply of some peculiar compound, which compound also existed in the ashes of the plants in question, and consequently the knowledge of this fact would have prevented both failures, and would have enabled each farmer to determine the true cause of his success, without leading them to contradictory conclusions. Such knowledge as this is quite practicable, even in the present state of the science; for the ashes of most cultivated plants have been analyzed, and all rocks have been most minutely examined, so that any farmer possessing a sufficient acquaintance with mineralogy or geognosy, to enable him to determine the species of rock which has given origin to his soil, will, by referring to any work containing the analysis of minerals, be able to learn pretty accurately the contents of his soil; and some other book of reference will give him the composition of his crops; a comparison of the two will lead him so far towards a just conclusion as to what crops will best suit his particular farm. We must admit, however, that a considerable increase of knowledge is required before this can be brought to perfection; for even after the comparison of the analysis of soil and crop, as above recommended, had shown a sufficient similarity of composition to warrant the belief that a plant would thrive well in some particular situation, the farmer might find that, after all, his crop was so scanty that it was not worth his while to expend any trouble upon its cultivation. Although science has already done much, more extended and minute research is greatly needed before this branch of the subject can be considered as at all approaching perfection; and we have no hesitation in affirming, that we believe much of the future progress of agriculture will depend upon increased knowledge in this wide field of chemical inquiry.

(2.) Soil, to be fertile must consist of a due admixture of impalpable matter and larger sized particles, so that it may be porous, and easily permeable by air and moisture, while, at the same time, there is a sufficient supply of matter in a state capable of undergoing chemical changes.

No fact has been more satisfactorily proved than the necessity of impalpable matter in soil; indeed, we may estimate pretty nearly the value of all soils, with the exception of clays, merely by determining the quantity of impalpable matter which they contain.*

The value of the impalpable matter is threefold. *First*, Many of the most useful ingredients of soil are of no value to plants until they are reduced to this extremely fine state of subdivision. *Second*, Even the alkalies, and other soluble components of rocks, are scarcely at all dissolved by water until the rock has crumbled to the finest dust. *Third*, All the useful organic matter of soil is in a state of combination with this powder, so that, in fact to a certain extent, the whole value of the soil resides in this portion alone. But larger sized grains are absolutely necessary to make the soil fertile; not that they are themselves directly useful to plants, but because, without them, the other ingredients could not act effectively. This depends upon the necessity of air and water getting free access to every part of the soil, which could not be the case were it composed altogether of impalpable powder; because this would become so compact after it had once been moistened, that it would form a cake quite impermeable by air; and after it had once become thoroughly dry, almost equally impermeable by the roots of plants. Were it not that the larger particles are continually crumbling down, and adding to the impalpable powder those materials which would otherwise become gradually exhausted, and thus serve to keep up the original fertility of the soil, it would be of very little consequence of what these grains were composed; for until they are reduced to powder, they exert no direct influence whatever upon the vegetation of the soil, of which they form a part. The practical advantage of knowing the above facts will afterwards be shewn.

(3.) There must be a sufficient supply of organic matter mingled with the soil in a state capable of decomposition by the action of air and water. Vegetable physiologists are much at variance as to the exact manner in which organic matter in soil affects the vegetation upon its surface, owing to some experiments which have proved the *possibility* of plants growing in soil destitute of all organic matter; but still they are quite agreed that, for the purposes of farming, there must be a good supply of elements entering into organic products; nay, they will admit that, *cæteris paribus*, the quantity of vegetable and animal matter in soil is a direct index of its fertility. This being the case, we need scarcely remark, that a knowledge of the fact must be valuable to the practical farmer, because the processes necessary to insure good crops must be greatly varied according to the abundance or scarcity of organic matter in the soil. If in poor land this matter abounds, something must be done to bring it into a more active state; if it is deficient, good crops can never be raised until a good supply is given it in the form of animal or vegetable manure. On this point we may expect great assistance from science; for hitherto we are very ignorant of the exact requisites, as regards organic matter in a soil, to suit it for each particular crop; and yet experience daily proves to us that there exists some peculiar relation between the two, which it has hitherto baffled all the endeavours of chemistry to detect. Should this difficulty be overcome, which we by no means despair of, the art of agriculture will acquire a degree of precision and certainty quite unattainable in the present state of our knowledge.

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* This experiment is easily performed. Take a glass tube about half an inch in diameter, and two feet long, closed at one end; put into the tube about two inches of the soil to be examined; fill the tube three parts full of water, and shake well; place it upright, and let the soil subside; the impalpable matter will form the uppermost layers of the deposit, and its quantity per cent. is easily found by measurement and calculations.

(4.) Soil, to be fit for profitable cultivation, must be free from any mineral substance which is destructive of fertility. We need scarcely offer any explanation of a fact which is so self-evident; because, however well a soil may be supplied with all the requisites for fertility, if it contain a single substance which is destructive to the growth of plants, it will of necessity follow that the soil must remain useless until this injurious matter be removed. The evident advantage of knowing the substance producing the sterility is, that chemistry can in very many instances suggest some practicable method by which the fault may be overcome. Thus, if the barrenness depend upon an acid, lime will cure it; if upon some soluble salt of iron, here again lime is needed; if upon some compound of magnesia, free exposure to the air will overcome the bad effects.

(5.) Soil must be capable of being reduced to a sufficiently fine tilth without an undue amount of labour, in order that its culture may be profitable. It does not require the aid of science to explain this statement, as it is one purely of economy; but we have thought it advisable to enumerate it here, were it for no other reason than to let the farmer see that, when studying theoretical agriculture, we do not forget that a process must be profitable before it can be advantageous. Were it not for this, the geologist might probably be loud in his praises of some plot of land of excellent qualities, but which was so stiff from an excess of clay, that it would require more labour and time to pulverize it, than could ever be recompensed, even by the heaviest returns.

(6.) Soil for a good farm must either be naturally capable of letting off any superabundance of water, or it must be capable of being made to do so artificially by draining.

The immense advantages of draining have been far too fully treated of by many of those who have devoted themselves to the improvement of the soil to require any lengthened observations upon the subject here, because every farmer has already had his mind impressed with the importance of this process; and the disadvantages of an excess of water in soil have been so fully demonstrated as to require no additional proof in this place. It follows, therefore, if a soil be so situated as, on the one hand, to be exposed to the deteriorating effects of an excess of water, and, on the other, to offer insurmountable obstacles to drainage, this soil, however well constituted otherwise, is completely useless to the farmer, at least in the form of arable land.

(7.) Soil, to be useful to the cultivator, must possess a structure which will allow the decomposition of organic matter mingled with it to proceed at a regular rate, being neither so fast as to waste the manure nor so slow as to keep it too long fresh. In a practical point of view this deserves the greatest attention; and although the fact that sand may be too light and clay may be too heavy, has long been acknowledged by farmers, still science has taught us at least two valuable facts concerning this, viz., 1st, The cause of the fault in both instances; and, 2ndly, The means of, in a considerable degree, overcoming it, by suiting the manure to the texture of the soil; or, if this cannot be effected, by employing means which will in some degree alter its texture. 1st, The cause of manure wasting upon very light lands depends upon organic matter being decomposed and converted into gaseous matter which escapes into the atmosphere by the joint action of air and moisture, and of this action becoming more rapid the more freely the organic matter is exposed to the air, provided it is at the same time supplied with a sufficient amount of moisture, without ever being *very wet*. Now, this is exactly the condition of manure in light sandy soils; the looseness of their texture admits of the freest circulation of air through their interstices, and at the same time allows all excess of water to flow through the soil during wet weather, while it facilitates the rising up of moisture from the constantly damp subsoil in times of drought; the result therefore is, that the manure is always freely exposed to air, is kept moist, and never allowed to remain long *very wet*. Thus, the very condition in which decomposition takes place with the greatest rapidity is constantly preserved and the manure in consequence yields its most valuable ingredients to the air, instead of to the roots of the plants, and every wind which blows over the surface of such a soil wafts away, for the benefit of the whole neighbourhood, that which ought to have been limited in its influence to the spot to which it was applied. The very reverse of this is the case with stiff clay; here the access of the air is greatly impeded; in fact, unless such land is very well wrought, no air can pierce below its surface, except such as is dissolved in the water which falls upon it, and the escape of water is so much retarded, that all substances contained under its surface are kept constantly *wet*. Manure, in this instance, is in the best condition to withstand decomposition, because, if thoroughly wetted, it is acted upon by the air dissolved in the water, but after that is exhausted no further change takes place except by very slow degrees. But a manure to be useful must be in a state of decomposition, for, until decomposed to a certain extent, it is of no value whatever to plants, the result, therefore, in this case is, that however much manure is given to the land, the greater quantity remains in a useless state, until, by the alternate drying and wetting of the soil by change of weather, its decomposition is at length effected. 2nd, The practical value of a correct knowledge of the above facts is evidenced by its enabling us to correct the faults, in a certain degree, by a proper choice of manure; for example, in the case of very light lands the farmer should avoid using those manures which are most easily fermented and dissipated, and should employ in preference such as take a longer time to enter into decomposition, as, for instance, woollen rags, wool waste, &c., and the cooler kinds of excrement, preferring that of the cow and sheep to that of horses and pigs.

Again, if circumstances do not admit of so free a selection, he should apply his farm-yard dung in a much fresher condition than he would to his clay land, and as near the time of sowing as he conveniently can, because the more fermented it is previous to its application, and the longer it lies on the bare ground, the greater will be the amount of loss. The treatment of land of too stiff a texture is twofold. *First*, By selecting the most putrescent manures, and either having them well prepared before they are applied, or ploughing them in some time previous to the sowing of the seed; *secondly*, Should circumstances permit, there are many cases in which, to a certain extent, a permanent cure can be effected, and the texture of the soil altered and rendered more open, by sufficient drainage, deep ploughing, and *paring and burning*.

We shall comment at large upon these under the fourth division, in which we purpose to consider the cures for many of the natural defects in soil.

(8.) The situation of soil must be such as to admit of all the operations of husbandry being performed in a proper manner, without occupying too much time; and the climate must permit of the plants arriving at perfection.

This is another purely practical observation, requiring no explanation further than to prove that in treating of a practical subject science must bind herself by laws to which she is in general a stranger. For example, were a chemist merely required to answer such a question as this, "Is the soil, of which the accompanying is a specimen, fit for cultivation?" he would analyze it, and finding all the requisites of a fertile soil, at once pronounce it well worthy of the attention of its possessor, whilst it might have been taken from the side of some hill far too steep to admit of horse labour, and exposed to a climate so bleak, that no crop could ever yield a profitable return. In this instance, a soil in itself excellent is rendered useless by external circumstances; but in order that the farmer may profit by the suggestions of the chemist, I need hardly remark, that *every* modifying condition, whether external or internal, must be carefully weighed before pronouncing a decided opinion.

(9.) In order that soil may be advantageously subjected to continued cropping, the farmer must keep up its essential qualities by ploughing, harrowing, and any other operations necessary to pulverize it. The value of the impalpable matter in soil has been already alluded to under (2), and we shall accordingly confine ourselves in this place to the enumeration of the practical advantages arising from a knowledge of the facts there brought forward.

The effect of ploughing, harrowing, &c., &c., is twofold; 1st, it loosens the soil and renders it more porous; 2nd, it pulverizes it: both of these are of the greatest value; for while the first prepares the soil for a freer admission of air and moisture, the latter renders these capable of acting chemically upon the different ingredients contained beneath its surface. The necessity of pulverizing is evident, because, as far as plants are concerned, it is of little consequence whether their roots come in contact with an agglutinated mass of powder, or a stone; both are equally impenetrable, and hence both are equally useless; so that a soil badly pulverized is in many respects similar to a very stony soil, with one exception, viz., that the masses of matter which are capable of being reduced to powder, being more porous than stone, are capable of absorbing a greater quantity of the liquids contained in soil, and thereby impoverishing the land; it is therefore of the greatest consequence for the fertility of the soil, that it should from time to time be pulverized to the greatest extent of which it is capable, without the expenditure of *too great* a quantity of labour. All must be aware that Jethro Tull was so deeply impressed with the importance of this pulverizing of the soil, that he frequently affirmed that, if properly performed, it might altogether supersede the necessity of manuring. Of course this idea is extravagant, but still, as it resulted from practical experience, it tends to show in a forcible light the great value of the operation. In process of time, science may enable us to employ some more efficient method for increasing the quantity of impalpable matter in soil, in a shorter period than it can be effected by the gradual disintegration of the stones by the influence of the weather, and thus render the loosest sands capable of profitable cultivation.

(10.) Soil intended for continued cultivation must have its supply of organic matter, and part also of its mineral ingredients, renewed by returning to it, from time to time, in the shape of manure, what has been removed from it in the form of crops, We have already observed that physiologists are far from being at one in their ideas regarding the exact manner in which the organic matter of soil influences its vegetation, but still they all acknowledge the practical advantage of a good supply; many, however, suppose that the value of manures consists merely in their mineral ingredients, while others place all their value in one single element of their organic portions, namely, their azote. Be this as it may, we have still the fact acknowledged by all, that to keep up the productive power of a soil, it must be supplied with manure. Much practical advantage may be gained by studying carefully the relation subsisting between the composition of a soil, and that of the manure best suited for it, because it will invariably be found that that manure acts most beneficially which contains the best supply of whatever is deficient in quantity in the soil for which it is intended, and that much good material is constantly lost or rendered unprofitable by the absence of any attempt to accommodate the manure to the soil. When the researches of the chemist shall have enabled him to decide with accuracy as to the peculiar food best adapted for each crop, this accommodation will be capable of being carried to a much greater extent than it possibly can be at present.

(11.) But the *condition*, as well as the *composition*, of the manure must be attended to, because soil must have its activity preserved by adding to it, at certain periods, substances in a state of fermentation. Numerous facts tend to prove that the success of many crops depends upon the existence of fermenting matter in the soil, and that however rich it may be in other respects, these crops can only be advantageously cultivated after a fresh addition of manure; this is particularly the case with the turnip. Without dung the richest soil will bear but an indifferent crop; while with manure, very poor soil, if it be not too wet, will at all times give a good return. Science has not as yet been able to account for this satisfactorily, although many of her votaries are willing to acknowledge its truth, and it is obvious that an acquaintance with the fact must be of the greatest value in assisting the farmer in his arrangements, for he will of course apply dung when he intends to raise a crop requiring the existence of fermenting matter, and thus insure its success while he does no injury to the following crops, whose growth is, to a certain extent, less dependent on the condition of the soil.

4. It frequently happens that the farmer is not contented with his soil in its natural condition, on account of certain defects under which it labours, and which the recorded experience of his ancestors has informed him can be overcome or counteracted by certain processes which he may carry into effect with more or less facility, according to circumstances. The chief of these are draining, liming, and paring and burning; and our object in mentioning them here is to point out what is really effected by each, so that farmers may be prevented from misapplying them from ignorance of their peculiar mode of action.

(12.) *Draining.*—Upon this subject we shall be very brief, as volumes have been already written upon it; and we are glad to say, that now almost all farmers are impressed with a due sense of its great advantages, especially as we have already treated of it at such length in our essay of last year. This operation can scarcely be misapplied, as we doubt if there is any soil in Great Britain which could be injured by allowing it to get rid easily of its superabundant moisture; still the method of using it may be greatly mismanaged, and the result be that the object in view is imperfectly accomplished at double the cost at which, if properly conducted, it might have been successfully completed. This depends upon a want of consideration as to the cause of the wetness, whether it depend on surface water, or on the existence of springs. A soil which is naturally capable of easily getting quit of surface-water may be rendered quite marshy by the existence of a spring. Now, to *furrow*-drain a field of this kind would in many cases be absurd, for in all probability the spring would be missed, and after all the expense of laying the drains the soil would remain almost as wet as at the first. The proper treatment in such a case is to search for the rise of the spring in the highest part of the field, and having found it, one good drain will frequently have the effect of drying the whole field. Again, when the wetness arises from both causes conjointly, viz., spring and surface-water, it is obvious that however free an exit be given to the spring, the soil cannot be made dry without having recourse to furrow-draining to a greater or less extent, according to the stiffness or porosity of the soil and subsoil.

(13.) *Liming.*—To enter minutely into all the effects produced by the application of lime to soil, would require a separate essay. We shall not attempt, therefore, any thing beyond a mere enumeration of the effects, and thence form a correct judgment of the cases to which it is applicable. Lime has three distinct great effects, in addition to several minor ones; 1st, it greatly hastens the decomposition of the organic matter in the soil, and in doing so renders it much more valuable to the crops; 2nd, it alters the texture of the soil to a certain extent, proportioned to the quantity applied; 3rd, it adds, of course, calcareous matter to the soil. From these considerations, it follows that lime is applicable to all cases where there is an accumulation of undecomposed vegetable matter, as in poor old pasture, heath, peat-moss, moorland, and the like. But, on the other hand, lime is contra-indicated in two classes of soils, viz., in those which are poor, from the want of organic matter, and not from want of care, as very poor moorland, thin shifting sands, &c.; and also in soils abounding naturally in chalk. A careful examination of the case should always be made prior to the application of lime, in order to ascertain whether it be judicious or otherwise, and likewise to determine the quantity likely to prove most useful; this should be regulated by the quantity of organic matter and of chalk in the soil, for the proportion of lime requisite will increase with the *increase* of the organic matter and the *decrease* of the chalk. The more organic matter, the more lime; the more chalk, the less lime will be requisite to produce the desired effect. It must, moreover, be remembered that, except in instances where there is a deficiency of calcareous matter in the soil, lime does not add directly to the fertility of the soil, but only increases it, by calling into activity what existed there before in a useless condition.

It follows, therefore, that, however great the benefits of liming may be, it really exhausts the soil, and hence should not be *repeated* without great caution; indeed, we are convinced that few lands, except perhaps peaty soil, will profitably bear a repetition of severe liming. The practical advantage of being acquainted with the foregoing facts is obvious; without it, indeed, liming becomes a most hazardous operation, particularly to the landlord's interest; for many lands will yield, for a year or two, heavier crops after a good liming, but afterwards the productive powers fall as much below the natural standard as they had been artificially raised above it. This observation, of course, applies only to such soils as either ought not to have been limed at all, or which, having been already subjected to the process, cannot bear its repetition without an ultimate loss.

In other soils, namely, those which are abundantly provided with undecayed vegetable matter, the good effected by the lime, in improving the texture, clearing the soil, and adding considerably to the impalpable matter, is far too great to be overbalanced by the diminution of the *absolute quantity* of organic matter in the soil, which is the necessary result of the increased rapidity of decomposition induced by its action.

In the application of lime to a soil, two things require especial attention, viz.—1st, the condition of the lime; and 2nd, its chemical constitution.—1st, A knowledge of the condition of the lime at the time of its application is most essential, because according to this depends in a great degree whether it be very beneficial or nearly effête. The utility of lime in effecting the decomposition of organic matter depends upon a chemical change which occurs during its transformation from *burnt* or *quick-lime* into *mild-lime* or *chalk;* it is necessary, therefore, that the lime and organic matter be in contact during the whole progress of this change, This may be effected in one of two ways; either shake the lime rapidly, spread it over the soil, and immediately afterwards plough it in; or make the lime into compost heaps, by digging a sufficient quantity of the surface soil to mix with the lime; turn it at intervals, mix the two thoroughly together, and after a few months spread the mixture carefully over the field, and then, as in the former instance, plough it in. The selection between these two plans must be regulated entirely by the particular circumstances of the place, the best time for driving the lime, the condition of the soil as regards the crops it may be under, &c. &c. 2nd, As regards its chemical constitution, it must be remembered that there frequently exist, associated with the calcareous matter, other mineral ingredients which may exert a most baneful influence upon vegetation; and it is obvious that this would destroy altogether the utility of the process, even were all the circumstances in other respects most favourable. This can be determined at once by chemical analysis; and as the constitution of the rock seldom varies considerably in one deposit, a single analysis at the quarry would generally be sufficient for the whole time during which it was worked.

(14.) *Paring and Burning.*—The immediate effects of this process are fourfold. 1st, It destroys a large quantity of organic matter. 2nd, It alters entirely the texture of the portion to which the heat is directly applied. 3rd, It reduces to a caustic state the alkalies and alkaline earths contained in the burnt portion; and 4th, By means of these alkalies it acts upon the remaining organic matter of the soil exactly as lime does. To arrive at a just conclusion as to the true economical merits of this process, we must bear all these four facts in mind. 1st, As it destroys a large quantity of organic matter, it of course exhausts the soil to the extent of the quantity destroyed; this is, therefore, in one respect, a disadvantage. 2nd, As it completely alters the texture of the portion burnt, viz., by giving to the clay the feeling and texture of sand, we must consider how far this would be advantageous to the soil. 3rd and 4th, As it produces alkali which acts upon the remaining organic matter of the soil, and thus further detracts from its supply of organic matter, it becomes of importance to decide whether the soil will bear the deterioration without a real loss of value. A careful comparison of the whole question leads to the following conclusions, viz.:—that with the exception of the alteration of texture above alluded to, paring and burning act in a similar manner to (though in a much greater degree than) lime; and that, economically considered, liming, when applicable, is in almost every instance preferable, because the same is effected with less loss. We should conclude, therefore, practically, 1st, that where lime is expensive, and the soil much injured by excess of undecayed woody fibre, paring and burning may be preferred. 2nd, Where the soil is a stiff clay, containing a sufficiency of calcareous matter naturally to supply the demand of the crops, paring and burning would be the most advantageous. 3rd, Upon sandy soil, not much overgrown with useless woody weeds, liming is far the best; or if the soil be already abundantly supplied with lime, then neither should be applied, but in their place wood ashes or kelp.

Thus much for the treatment of soil. We shall next examine,

II. *The effects of vegetation upon soil,* or the various methods in which vegetation has been proved to affect the soil. Science has been enabled to explain satisfactorily the causes of the following well ascertained facts:—

5th, Concerning soil in its natural state:—

(15.) Uncultivated soil, however rich, becomes gradually less and less fertile until it has attained the condition either of moor or marsh.

(16.) Uncultivated soil retains its luxuriance for the greatest length of time, when covered with forest trees and other large vegetables.

(17.) Land not disturbed by the plough produces successive crops of different kinds; or, in other words, a sort of natural rotation is, to a certain extent, maintained.

(18.) On uncultivated land when any species of plant disappears, its place is supplied by one of less value as an article of food, and thus the richest pasture comes in time to produce only the coarsest and most worthless species of grass.

(19.) Although the natural produce of uncultivated soil thus uniformly decreases in value, the soil itself becomes progressively richer; so that when brought under the plough, it will yield much larger returns than could be expected from its spontaneous produce.

6th, Concerning regularly cultivated soil:—

(20.) Soil continually ploughed yields its nourishment in much greater abundance, and with greater ease, to plants growing upon its surface.

(21.) The facility with which the productive powers of *well* cultivated land are diminished, depends on its organized matter being more easily converted into compounds soluble in air and water.

(22.) The decrease of fertility in *carelessly* cultivated soil depends, in addition to the above circumstance, upon a diminution in the proportion of its impalpable matter.

(23.) Cultivated land, when properly taken care of, becomes gradually richer and richer, notwithstanding the increased quantity of produce annually removed from it.

(24.) If the same plant be cultivated for several years successively upon the same spot, the soil much more rapidly decreases in fertility than when a variety is kept up.

(25.) Some of the most valuable mineral constituents of soil decrease in greater rapidity in proportion to the greater care bestowed upon its cultivation, altogether independent of the portions removed by the crops.

Let us now proceed to the explanation of these facts.

(15.) Uncultivated land, however rich, becomes gradually less and less fertile, until it has attained the condition of moor or marsh. This, and several other of the facts related in the present section, are capable of being explained by reference to the important functions of azote in the vegetable economy, concerning which much has been ascertained during the last few years, and from which several general facts may be deduced, although, it must be confessed, we are yet very much in the dark respecting the fundamental or governing principles that regulate the facts in question.

Careful observation has proved the two following very important circumstances, viz., 1st, That the more azote any plant contains, the more dependent it is upon the soil for its support. 2nd, That the value of any plant for food is, *cœteris paribus*, directly dependent upon its quantity of azote. Now, if we trace the history of any portion of soil, we shall find that it has gone through two distinct series of changes, which are exactly the reverse of each other. Let us suppose, for example, that several seeds of various kinds are scattered on the surface of a rock: those which contain much nitrogen will shoot up with the others, but long before arriving at perfection will wither and die for want of proper nourishment, so soon as they have exhausted the supply of azote originally contained in the seed; those seeds, on the contrary, which contain but little of this elementary principle are so independent of the soil, that they can attain a certain degree of perfection, and produce a few seeds even upon the surface of a barren rock.

When autumn is passed, vegetation for the year ceases, and all the plants wither, and during their decomposition become mingled with a certain proportion of the constituents of the rock, which has become gradually disintegrated by the joint influence of their roots, and the moisture which they have retained about them. Thus a soil is produced. During the next spring the seeds remaining in the ground spring up, and being more plentifully supplied with nourishment, a more luxuriant crop is produced. This continues to occur from year to year; and as there are several natural sources from which soil derives its nitrogen, independent of the vegetable matter decaying beneath its surface, as, for instance, from the rain which falls upon it, the soil becomes more and more capable of producing those plants containing greater quantities of azote, or in other words a tolerably rich pasture is the result. But no sooner has this occurred than a directly opposite series of changes commences; the soil has by this time become covered with a mass of root fibres, which mat it together and prevent the free circulation of air in its interstices, and hence decomposition does not occur with sufficient rapidity to afford a supply of nourishment for highly azotised plants; these, therefore, die off, and as the evil increases annually, so the fertility of the soil decreases, until its surface is covered with those plants which are so far independent of the soil, that they can arrive at perfection although it continue in the state just described; or, in other words, the soil has now become moor or marsh according to its condition as respects water, for the only difference between the two is, that their herbage is regulated by the amount of dryness or moisture, those plants which require an abundant supply of water thriving so luxuriantly in the latter as to keep under all other kinds of vegetation.

The practical advantage of an acquaintance with the above fact is obvious, when we consider that upon a correct application of it must depend all the rational means of improving waste land, for as the fault lies in the condition of the soil itself, no surface application can be of permanent advantage.

(16.) Uncultivated soil retains its luxuriance for the greatest length of time when covered with forest trees and other large vegetables.

This also depends upon an analagous cause. The proportion of nitrogen in wood is very much less than in any of the herbaceous plants emp oyed as food, and hence it follows that they are more independent of the soil as far as regards organic matter. But in addition to this, large trees act upon a much larger portion of the soil; for whereas, in pasture land, few, if any, root-fibres extend more than six or eight inches below the surface; in forests of long standing it is almost impossible to state accurately the extent to which their roots penetrate, for if the subsoil be porous, they will travel to great distances in every direction. Again, the long duration of each individual plant is a great cause of the fertility being preserved, because, as the root-fibres are continually lengthening at their extremities, the tree is constantly coming in contact with new portions of soil; whereas if one dies, and is replaced by another at short intervals, the new roots have to traverse the same spots which have been visited, and partially exhausted, by a former generation. These three reasons are abundantly sufficient to account for the fact of the luxuriance of natural forests being preserved for so much greater a period than that of natural meadows.

(17.) Land not disturbed by the plough produces successive crops of different kinds, or, in other words, a kind of natural rotation is, to a certain extent, maintained. This is a most interesting fact; and although as yet our acquaintance with it is but limited, still the examples deduced to prove its truth are well worthy of attention, and should lead us to examine more minutely into the herbage of natural meadows to ascertain the extent of this change of crop. The most decided instance which has hitherto been published, is the following, which is related in M. Liebig's valuable work on the application of chemistry to agriculture. The author observes, that barren spots gradually appear in fields bearing only one kind of plants, but if "such a field be observed for several years, it is seen that the barren spots are again covered with vegetation, whilst new spots become bare and apparently unfruitful, and so on alternately."

But if we examine a portion of ground which bears several different species of plants, we shall find that some are continually disappearing, and other new ones supplying their place, or some of those already existing growing up in far greater abundance. Thus, for instance, in all natural meadows, white clover and the finer kinds of grasses disappear, and are replaced by those of coarser growth; but if anything occurs to prevent these from completely overgrowing the soil, the clover and other grasses will re-appear after a short interval, again to be lost sight of in a few years. The knowledge of this is valuable, as proving to us that the necessity for a rotation of crops does not depend upon the plants being in a somewhat unnatural state from the effects of cultivation, but that it is requisite for all plants even in a state of nature, except perhaps those comparatively useless grasses which constitute the bulk of the vegetation in all neglected spots. It is very desirable that more extended observations should be made upon this point, for an acquaintance with the order in which plants succeed each other naturally would assist greatly in the construction of a more perfect rotation than any hitherto suggested.

In the meanwhile, we think enough has been learned to prove the truth of the statement, but by no means sufficient to enable us to draw any practical conclusions therefrom.

(18.) On uncultivated land, when one species of plant disappears, its place is supplied by one of less value as an article of food, and thus the richest pasture comes in time to bear only the coarsest and most useless species of grass. This may be considered almost as a corollary upon the above, as it evidently depends upon precisely the same cause.

When a flowering plant is growing in a state of nature, it annually sheds its seeds in the immediate neighbourhood, and consequently (in the case of an annual) its place is filled the next year by all the produce of the seed, and the result is, that in a few years a large space of ground is occupied by the succeeding generations of one original plant; or should it be a perennial, much the same occurs, with the exception of the old plant continuing and checking the luxuriance of those seeds which fall on the spots already pre-occupied.

But when the soil becomes exhausted of the food best suited to the growth of this plant, it matters not how many seeds may be shed upon it; they will all either die or remain inactive, until stimulated by the presence of their favourite nourishment. When, however, soil is thus unfitted for the growth of one plant, it by no means follows that it is equally so for all; and, accordingly, some other seed which has accidentally fallen on the spot springs up, flowers, produces seed, and the whole series of phenomena again takes place. Now, the following circumstance connected with the influence of azote upon vegetation regulates the order in which the various herbs and grasses succeed each other. The more azote a plant contains, the more dependent it is upon the condition of the soil, and at the same time the more valuable it is for food.

These, therefore, are the first occupants of a luxuriant plot of ground. As the fertility of the soil diminishes, these gradually disappear, and are replaced by others less dependent upon the soil, or, in other words, containing less azote, and hence less valuable as food, and so forth, until at last the ground produces nothing beyond the coarse herbage of the moor or marsh.

(19.) Although the natural produce of uncultivated soil thus uniformly decreases in value, the soil itself becomes progressively richer, so that when brought under the plough it will yield much larger returns than could be expected from its spontaneous produce. This statement may appear somewhat strange to those who have attended solely to the theory of agriculture; while to the practical farmer, however inexplicable it may be, still he is too well acquainted with the fact to doubt for one instant its truth. Careful investigation removes the difficulty at once. The chief reason why the produce of uncultivated soil becomes continually less luxuriant, depends upon the soil remaining undisturbed, and in consequence of this becoming consolidated to such a degree that it assumes, for the time, some of the conditions of stiff clay, being nearly impervious to air, and losing the benefit of much of its impalpable matter by its becoming agglutinated. The result of this is, that the decomposition of the organic matter of the soil either ceases altogether or progresses at an extremely slow rate. But plants obtain the elements of which their organic matter is composed from the air as well as the soil; the herbage, therefore, of land, in the condition just described, increases chiefly at the expense of the atmospheric supply of nourishment, and thus when it decays a *new* quantity of organic matter is added to the soil, and from the slowness of decomposition occurring therein, it gradually accumulates from year to year, so that when brought into cultivation, such soil will be found possessed of a much greater quantity of organic matter than it originally contained. A knowledge of this fact is of course useful, as it supplies us with a method of increasing the organic matter of soil, without the expense of adding manure to it; and although the crops produced in the mean time are undoubtedly inferior, still there are many situations in which this plan is by far the most economical. When, therefore, soil is losing its value from over-cropping, nothing more is necessary to reclaim such land than to lay it down in grass for a few years; and as the grass will of course be pastured by stock, the decrease of produce which generally occurs from year to year is fully compensated for by the droppings of the cattle, which increase the fertility of the soil so rapidly that the desired effect is in this manner produced some years sooner than could otherwise be the case.

8th, Concerning regularly cultivated soil :—

(20.) Soil continually ploughed yields its nourishment in much greater abundance, and with greater ease to plants growing upon its surface.

This is one of the chief causes of the greater luxuriance of well-farmed land, as compared to that of the same texture, and under the same climate, which is carelessly attended to. There are two things which constitute the chief business of every good farmer; 1st, he must keep his soil in the condition in which its natural fertilizing powers are brought most fully and freely into exercise; and 2nd, he must as far as possible increase their power. Now, continually repeated ploughing and harrowing has this effect, by producing, as already shewn (9, the greatest amount of impalpable matter, and likewise insuring the free circulation of air; and we have likewise shewn (7) that the greater the porosity of a soil, the greater the rapidity of decomposition of its organic matter. Now, the practical benefit of being acquainted with this circumstance is, that the farmer may be led to bear in mind that the processes employed by him to increase his crops, have, of necessity, the effect of impoverishing his soil with greater rapidity than would have been the case had the land remained unemployed; and consequently the more he removes annually, in the form of crop, the more he must add in the shape of manure.

(21.) The facility with which the productive powers of *well* cultivated land is diminished, depends upon the fact of its organic matter being more easily converted into compounds soluble in air and water. This has been already explained under (7) and (20), and therefore requires no further observations here.

(22.) The decrease of fertility in *carelessly* cultivated land, depends, in addition to the above circumstance, upon a diminution in the proportion of its impalpable matter. This is owing to a want of sufficient care in working the land so as to effect its pulverization, and likewise to allowing the old roots to remain in the soil, and thus permitting it to become foul. When a soil is foul, the old roots bind large portions of the impalpable matter together, producing, as has been already explained, masses which are of as little value as if they were stones, until something has been done to break them down. Thorough cleaning of the land by ploughing, harrowing, and grubbing, is all that is required in this case to restore the soil to its original fertility, but without this no quantity of manure will enable it to bring its full powers into action.

(23.) Cultivated land, when *properly taken care of*, becomes gradually richer, notwithstanding the increased quantity of produce annually removed from it. This depends upon the same general principle as the gradually increasing richness of uncultivated land, viz., the quantity of organic matter annually produced by elements obtained from the atmosphere, so that every vegetating field is continually engaged in bringing down and depositing in the soil what was floating about it in the form of gas. A number of calculations have been made to prove that the above fact demonstrates, that soil yields no organic matter whatever to plants; but all these are founded upon a basis altogether erroneous. They state, what is no doubt true, that as part of the produce is annually exported from the farm, and a still greater part consumed and converted into beef and mutton, the quantity of organic matter added to soil can never equal that removed from it, unless manure be imported; and therefore, if cultivated soil becomes richer in organic matter, it proves that it has yielded *nothing* of this to the crops. There is obviously, however, a mistake here, because all it proves is, that the manure and the atmospheric supply *together*, equal more than the whole weight of the crop; which the most accurate calculations will prove to be the case.

(24.) If the same plant be cultivated for several years successively upon the same spot, the soil much more rapidly decreases in fertility than when a variety is kept up. In treating of the kind of natural rotation which occurs upon uncultivated land, we stated that soil became unfitted for a continuance of the same plant, long before it was incapable of bearing others. The exact cause of this is still somewhat involved in obscurity, owing to the imperfect state of our knowledge respecting the precise form in which plants receive their nourishment; nevertheless, as far as our knowledge extends at present, we may state, that the chief reason of the rapid decrease of fertility of soil continually cropped with the same grain, appears to be, that as different plants require their food in different conditions, while the same plant always requires the same elementary substances, both organic and inorganic, to be supplied to it; so, if the same plant is continually cultivated upon one spot of ground, too great a demand is made for some particular ingredient, and the crop begins to fail as soon as this becomes deficient in quantity.

If, on the contrary, a judiciously selected variety be kept up, the result is, that each succeeding crop makes use of that which the former did not require, and thus all the various nutritive principles are equally turned to good account.

(25.) Some of the most valuable mineral constituents of soil decrease in greater rapidity in proportion to the greater care bestowed upon its cultivation, altogether independent of the portions removed by the crops. It is of considerable importance that this fact should be borne in mind. We think that far too little attention is in general paid to the *natural tax* (if we may be allowed the expression) which is laid upon all cultivated land. What we refer to is, that the operations performed on soil to enable it to produce heavier crops, have at the same time the effect of rendering the soil more easily deteriorated by natural agents; so that the same means which enable the plants to obtain with greater ease a larger supply of nourishment, increase also the continual waste which occurs by the escape of valuable matter in solution in air and moisture. The particular substances referred to under this head are the alkalies and alkaline earths, whose great value in soil is quite undeniable.

Now, we have already seen that ploughing and harrowing have two effects, 1st, of loosening the texture of soil; and 2dly, of pulverizing it. When rain-water falls upon soil, it always contains a considerable quantity of carbonic acid dissolved in it, which acid has the power of dissolving a certain definite quantity of lime; now, the looser the texture of the soil, the more readily the rain flows through it: and hence it follows that the more a soil is ploughed and harrowed, the greater will be the quantity of lime annually carried off by the rain-water which finds its way into the drains. Again, it is a beautiful provision of nature, for the purpose of preventing all soil from becoming soon barren owing to the waste of alkalies in it, that no alkali, however soluble in water when pure, can be dissolved in water, when associated with the various ingredients consituting rocks and stones, until these are reduced to impalpable powder; but when they assume this form the first rain that falls is sufficient to wash it away, unless it has entered into some chemical combination which is less easily dissolved. The result here, therefore, is precisely the same as above; the more you pulverize a soil, the more alkali will be annually removed by the rain-water.

The practical advantage of knowing this is, that it will serve to remind the farmer of the waste of valuable material which is constantly occurring in his best soil, and hence prove to him the necessity of renewing these from time to time, should his crops give indication of a deficiency.

We now come to the consideration of the third great division of our subject.

[*To be continued.*]

THE FARMER'S PROGRESS.

No. VIII.

(Continued from November, 1840, p. 328.)

Sir,—In the seven preceding papers, under the above title, I gave a faithful detail of the simple, gradual, and effective means by which I have brought my farm, on the bank of the Mersey, almost into the condition of a garden—far more than doubling the produce—thus paying great interest for every shilling expended in its improvement; and in p. 7 of this magazine for January, 1840, I explained the mode I adopted on a wild, uncultivated estate on the bank of the Wye, in Derbyshire, by which it became so fertile and so beautiful, that I sold it for more than three times the sum I paid for it, amply repaying me for every outlay during the twenty years I held it, with accumulated interest and a good profit besides.

When I mentioned the sale of that estate, I added—"I have purchased a very similar property, but on a more extended scale." It is my progress, in this new theatre of action, which I now present to your readers, in return for much interesting instruction they have imparted to me in the miscellaneous pages of the "Farmer's Magazine." In my humble opinion, a simple narrative of the practice or of the experiments adopted by agriculturists, with faithful reports of the actual result, whether successful or otherwise, is the cheapest and the best mode of communicating valuable information, and of improving the general agriculture of Great Britain.

Before I proceed to describe the progress I have thus far made in the improvement of my newly-purchased estate, it may be well to give a brief description of the property, and of the circumstances that led to my preferring it, as an investment, to any of the numerous estates on sale in various parts of the kingdom which I had visited and inspected.

In respect to picturesque scenery, it much resembles the estate I sold on the bank of the Wye: it abounds in brilliant springs and streams—timber grows luxuriantly—numerous stumps of massive oak prove at once the magnificence of the timber in days of yore, and its more recent injudicious destruction; there is abundant proof of the soil being naturally deep, rich, and generous; but as to the cultivation, it is hardly possible to conceive anything more wretchedly bad, the following being the general practice. A few acres of the smoothest grass upland is annually pared and burnt for a crop of turnips; oats or barley follow year after year, until the soil is quite exhausted, when it is left a prey to weeds; a little manure, collected during the depth of winter, from cattle fed, or rather half-starved, on straw, intermixed with thistles, and occasionally on mouldy hay, nearly half rushes, supplies the family with *excellent* potatoes, succeeded by a crop of thistles and wheat; sometimes a little manure is saved for grain or turnips, but on the average of the whole estate, three-fourths at least of the manure is washed into the river or otherwise wasted. As to manuring or top-dressing the meadows, such a proceeding had never been heard of. The pigs roam at large, but, more rational than their masters, they always contrive to be within the shrill call of the good-wife at the usual time of turning the butter-milk, &c., into the troughs, placed in a field or open yard.

The farmers' chief dependance is on the produce of the adjoining sheep-walk; and their greatest pride is to have a widely-extended farm, and once a year to display a handsome load of butter at the Leominster fair.

Although every farm was tenanted when I came into possession, I found abundant employment for a number of labourers, in fencing, thinning, and pruning about sixty acres of plantation—in pulling down a creaky old corn-mill, with its two ponderous wooden water-wheels, and erecting a complete mill with an iron wheel, having abundant power in the driest seasons, not only for corn, but for a bone-mill, a circular saw and a lathe, which the same wheel turns, in a building adjoining—in forming a nursery of eight acres—in pulling down and re-building several farm-houses and barns—in repairing others—in erecting cottages, and introducing cleanliness and comfort—in planting quickset hedges, protected by wire fences—in levelling and improving roads—and forming large heaps of compost from a plentiful mixture of mud, weeds, leaves, and the droppings of cattle, accumulated during many years.

But those novelties, although absolutely necessary to the eventual improvement of the estate, could have little or no effect in opening the eyes of my tenants to improvement in husbandry.

The death of a tenant, however, enabled me to adopt the best mode of imparting instruction—namely, by example. He was a diligent, worthy old man, clerk of the parish church, the crack farmer of the neighbourhood, who bequeathed a large stock and good property to his family, and splendid crops of docks and rushes, thistles and charlock to his successor on the farm.

I took possession of the farm on the 25th of March, 1841, with a determination rapidly to improve its condition, from a double motive—first, to instruct my tenants in the proper management of their farms; and secondly, so to improve its condition as to induce some experienced farmers, from a distant agricultural district, possessing capital, ability, and character, to take the farm on a lease of twenty or more years, commencing at a low rent, with a reasonable fixed advance every five years, unfettered by limitations as to crops, except during the three concluding years of the lease, merely to prevent unfair exhaustion. Many of the neighbouring farmers were very desirous to enter upon it, in consequence of the sheep-walk attached to it being dry sound land, and the whole of the farm (being old abbey land), free from tithe except a trifling modus; but, as I was determined to establish it as a model farm, I preferred keeping it in hand until it assumed a very different appearance.

In order to draw the attention of my tenants to the advantage of draining, and at the same time of turnip drill husbandry, I hurdled off about three acres from the wettest and roughest part of a large rushy field, certainly not then worth a rental of 4s. per acre. Being separated from a public highway only by a young quickset hedge and a wire fence, it is open to public view. And it was amusing to hear one universal opinion, that all the money would be thrown away; that it was impossible to drain such land; and, when a quantity of bluish white clay of a soapy feel was dug up to the surface, the knowing ones predicted that it would spoil all, and *never yield a crop*.

The three acres being effectually drained, the surface levelled, and the various soils, alluvial, bog, sand, and clay, being intermixed in the operation of trenching, the principal part is now covered with a splendid crop of drilled Swedes, and the remainder is a good crop of mangel wurzel, with a smaller portion of carrots. A severe hail-storm in June battered the mangel, and obliged me to fill up some blanks with transplanted Swedes, but take the whole together the result is highly satisfactory; and the very farmers who prognosticated disappointment, now freely admit that the land is increased in value to a tenant more than tenfold.

The draining of these three acres being only one link in a chain of extensive importance, I defer the description of it to a future paper, when the conversion of sixty or seventy acres, hitherto under the dominion of frogs and tadpoles, into sound meadow land shall have been accomplished, by means dissimilar to everything I have read in the *Farmers' Magazine*, more economical, and as far as my operations are yet completed, perfectly effectual.

The operations above-mentioned only commenced last autumn, and would ere this have been completed, but for the following circumstance. Two miles of the highway, betwixt my estate and the lime-kilns, were during the last wet summer, so cut through to the clay by narrow-wheeled waggons, that it was actually *impossible* to obtain a load of lime. Lime I must have; fortunately, I had previously surveyed an excellent line for a private road of three miles through part of my estate; therefore I took my men from the drains, and mustering about thirty stout fellows, I have opened the road, invaluable to the estate, although the interest of the total cost—culvert gates, fencing, and everything included—will not add 3d. per acre to the rental. The road was open to my lime-carts in early seed time, and is so very nearly finished that the draining will recommence immediately after harvest. Two horses now haul a greater load of lime or coal in twenty-four hours, than four horses formerly did in forty hours.

It was to restore to a productive state about fifty acres of arable land that had been exhausted by incessant ploughing, that I directed my first and most active attention. Having excellent iron swing ploughs, made at the foundry of Meredith, at Kington, and active horses that stept well together, and the soil being light, dry, and deep, we managed to get under the dock roots; many tons of which we converted into manure by decomposition, but a far greater proportion we burnt into ashes. Women, girls, and boys followed the ploughs, collecting weeds and the stones thrown up by deep ploughing, whilst men with strong forks and thick gloves, grubbed up the largest of the docks, thistles, and straggling brushwood.

A large iron roller, cast at the same foundry, was of great service in pulverizing the surface, and causing weeds to vegetate to be destroyed by harrows. My plan is to lay down all the arable land with perennial grass seeds, in order to have a few years' rest, after having been under the plough more than twenty years. One noble field of nine acres, I am credibly informed, has had no rest during sixty years; how altered its appearance already? Eighteen months ago it was completely overrun with noxious weeds; there were then a thousand docks and thistles where scarcely one is now to be seen; now, half the field is laid down with a clean good crop of oats and perennial grass seeds, the other half, and several other fields, are now in turnip fallow, preparing to be also seeded down next spring.

Being very short of manure for so great an extent of turnip drills, I listed into the service a great quantity of fern, growing upon a ley of one hundred and seventy acres belonging to this farm, which—trampled by cattle and horses, sheep and pigs, imbibing the urine, and well mixed with farm-yard dung—has enabled me to drill a large portion of the fallows with Swedes, which I never venture, except for experiment, without a basis of farm-yard manure. I have also used many tons of ashes from burnt coppice wood, peat, and clay, carbonized by the exclusion of air. Having an inexhaustible supply of those local additions to farm-yard manure, I am endeavouring by various combinations with bone-dust, guano, and nitrate of soda, and also with the offal of slaughtered animals, to ascertain with how little of those, and other expensive manures, exhausted land may be restored to a state of fertility. The result of these experiments will be impartially ascertained. CINCINNATUS.

August 20th, 1842.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—In reading your interesting journal of last month, I perceived some observations by Mr. Milburn, of Thorpfield, upon an essay of mine on the "Analysis of Bone-dust and Rape-cake." I am much pleased to find that you have published the paper itself, for, had this not been the case, your readers must have formed a most extraordinary opinion of it, had they been guided by Mr. Milburn's remarks. I cannot conceive how Mr. Milburn (an individual for whose practical knowledge I have great respect) could possibly have made such extraordinary mistakes as he has done in his remarks. It appears to me that in all cases of difficulty, such as Mr. Milburn appears to be labouring under, it is far the best plan to write privately to the author of the paper—and I am certain that, had Mr. M. done so, I should have most cheerfully satisfied his request. As, however, he has thought proper to make his observations public, I am compelled, though unwillingly, to adopt the same method, though I have the greatest dislike to anything in the shape of *paper controversies*.

Mr. Milburn is apparently quite unaccustomed either to chemical reasoning or arithmetical calculation, and hence has made some most unaccountable mistakes. He tells us that *he has added together* the various data in table 4. I can only say that he might just as well have added the bone-dust, rape-cake, and farm-yard dung together at once, and the conclusions would have been just as near the truth. Why, any one who looks at table 4 must perceive that they do not represent the analysis of either of the three manures, but merely the relative proportion in each of the different classes of ingredients; and it follows, therefore, that "total organic matter" contains both the "soluble matter" and "easily-dissolved matter," and so on. To give a familiar example, let us suppose that an individual, ignorant of our coinage, had two purses, of which he desired to know the value, and for this purpose sent them to a banker; the banker returns an answer that each purse contains 100*l*., composed as follows :—

	No. 1.	No. 2.
Bank notes	£50	£20
Gold	20	60
Silver	29	17
Copper	1	3
	£100	£100

If, however, the owner wished to know not only how much of each metal or paper the purse contained, but how many of each coin, the banker would give as an answer—

	No. 1.	No. 2.
TOTAL BANK NOTES	£50	£20
In £5 notes	20	10
In £1 notes	30	10
TOTAL GOLD	20	60
In sovereigns	19	50
In half-sovereigns	1	10
TOTAL SILVER	29	17
In half-crowns	28	14
In shillings	1	3
TOTAL COPPER, in pence	1	3

Now I presume that, if Mr. Milburn received such a reply, he would scarcely think of adding, all the different items of the 2nd table together; for if he did so, he would come to the curious result that two purses containing 100*l.* each, could be *proved* by calculation to contain respectively 199*l.* and 197*l.*—a most *admirable* way of making money!

Let us proceed, however. Mr. Milburn accuses me of "multiplying the constituents of bone-dust and rape-cake, and not those of farm-yard dung in an equal ratio;" and seems to think that I have done this with the phosphates in bones. Now, I expressly stated in my paper that the *apparent* discrepancy in the amount of phosphates in bones in the two analyses was owing to their being partially soluble in caustic potass. In table 4, therefore, I corrected this error. 100 parts of bones, when burned, left 55 per cent. of phosphates—hence 45 per cent. was burned away. Now, on referring to table 1, we find that 11·5 per cent. (not 45·535, as he states it) is water; this, therefore, must be deducted, and of course the remainder 33·5 represents the total organic matter, because bones are composed entirely of water, organic matter, and ashes, which in this instance are almost entirely phosphates. All Mr. Milburn's mistakes have evidently arisen in the same way as the above, viz., from his endeavour to explain what he really knows nothing about. For example, let us look at the following statement:—He says, "If the calculation of bones and dung, taking the bones as a standard, be correct, it must also be clear that the converse must be also accurate, taking farm-yard dung as a standard." Of course, this must be true; but, instead of comparing them, forsooth, Mr. Milburn makes out a list of his own, the data for which I cannot discover. Let us, however, compare them separately, and we shall have the following:—

	One ton of bones equals farm-yard dung.	Farm-yard dung equal of bones.	
As regards—			
Organic matter……	+ 1· ton	+ 1· ton	
Soluble matter ……	+ 1·	+ 1·	
Easily-dissolved matter	+ 2.9 tons		— 2·9 tons
Azote……………	+ 3·9		— 3·9
Saline matter ………	+ 5·		— 5·
Earthy phosphates….	+18·3		—18·3
	+32·1	+ 2	—30·1

Here we have, of course, taken the converse algebraic signs—that which was plus in the first table becoming minus in the second; because it stands to reason that, if the first table represents the proportion in which each ingredient is contained *in excess*, the converse must show how much it is *less than* the first.

Comparing the two tables together, it will be seen that in the first two properties the two manures are equal; these, therefore, annul one another, and hence the case stands thus:—1 ton of bones equals 30·1 tons of farm-yard dung, 1 ton of farm-yard dung is 30·1 times inferior (or *minus*) one ton of bones, and therefore 30·1 tons of farm-yard dung equals 1 ton of bones.

With regard to the phosphates in farm-yard dung—or "*manure,*" as Mr. Milburn wishes it called—I may state that of course they were obtained by burning a separate portion, as in the case of bones; and likewise that this manure was analysed in the state in which it is applied to soil.

Mr. Milburn concludes by stating that the various amounts of azote in the three manures explains at once their superior value. Let us test the truth of this.

Bone-dust contains 1·77 per cent. of azote—hence 16 bushels will contain 11¼lbs.; Rape-cake contains 4·92 per cent. of azote—hence 1 ton will contain 110¼lbs.; farm-yard manure contains 0·45 per cent. of azote—hence 20 tons will contain 202lbs.

If, therefore, the azote were the only active ingredient, 20 tons of farm-yard dung would produce nearly 20 times as heavy a crop of turnips as 16 bushels of bones!

Should Mr. Milburn desire further information, I shall be most happy to answer any questions addressed in a private communication; but, as I have before stated, I have no relish for controversies in periodicals—they seldom do good, and generally lead the writers to indulge in language far different from what could be employed in private correspondence. When the truth is desired, it is far better to go at once to the fountain-head; and if Mr. Milburn had written a note to me, stating the difficulty he experienced in understanding my paper, I should most cheerfully have put him right, and there would have been no occasion for his *published* remarks in your journal, which, I feel confident, a very little personal commuication would make him thoroughly ashamed of.—I have the honour to be, Sir, your obedient servant, HENRY R. MADDEN, M.D.

Penicuik, August 15*th*, 1842.

GLOUCESTER FARMERS' CLUB.—The usual monthly meeting of this club was held at the Spread Eagle, on Saturday, the subject for discussion being "On the Comparative Merits of Oxen and Horses in the Management of Arable Land." Mr. John Stokes, of Pauntley Court, introduced the subject by stating the result of four years' experience, whereby he was convinced that, for field labour, with the exception of carting, oxen were superior to horses. He found that a team of four oxen could plough as much, and with as much ease, as three horses could; the cost of the former not exceeding 12*l.* per head, while the latter would cost 25*l.* per head. The cost of maintenance was decidedly in favour of the former, for while his horses cost him 7*s.* per head per week, his oxen did not cost him more than 4*s.* He usually began to work his steers when they were two years and a half old, and found them capable of ploughing an acre a day throughout the year, if required; and setting aside the saving in the first outlay—maintenance, harness, and attendance—which was very considerable, the sale of the oxen produced on an average a profit of 4*l.* per head per annum. He therefore strongly recommended that on all arable farms requiring two or more teams one half should be oxen. By so doing, not only would a profit be received, but a much greater advantage would be conferred on the country by having to sell that stock, which when fed, makes the best of all animal food—good beef—instead of supplying food for dogs, which is the case on most farms. Several of the members approved of employing a team of oxen to large farms, but differed in opinion with Mr. Stokes as to the amount of work capable of being performed; they also thought it impossible for steers of the early age of two years and a half to be able to perform daily work, or that so large an amount of profit could be realised on their sale, if constantly worked. An objection was made to the use of oxen on heavy wet soils, on account of the injury sustained by the land from poaching; but Mr. Stokes said he had never experienced any inconvenience on that score, as he always endeavoured to avoid working his land when it was in a wet state.

INCOME-TAX TABLE.

By the following Table any Person can immediately ascertain the amount payable under the Income-Tax.

Income.	Tax.			Income, less Tax.			Income.	Tax.			Income, less Tax.		
£.	£	s.	d.	£	s.	d.	£.	£	s.	d.	£	s.	d.
1	0	0	7	0	19	5	63	1	16	9	61	3	3
2	0	1	2	1	18	10	64	1	17	4	62	2	8
3	0	1	9	2	18	3	65	1	17	11	63	2	1
4	0	2	4	3	17	8	66	1	18	6	64	1	6
5	0	2	11	4	17	1	67	1	19	1	65	0	11
6	0	3	6	5	15	6	68	1	19	8	66	0	4
7	0	4	1	6	15	11	69	2	0	3	66	19	9
8	0	4	8	7	15	4	70	2	0	10	67	19	2
9	0	5	3	8	14	9	71	2	1	5	68	18	7
10	0	5	10	9	14	2	72	2	2	0	69	18	0
11	0	6	5	10	13	7	73	2	2	7	70	17	5
12	0	7	0	11	13	0	74	2	3	2	71	16	10
13	0	7	7	12	12	5	75	2	3	9	72	16	3
14	0	8	2	13	11	10	76	2	4	4	73	15	8
15	0	8	9	14	11	3	77	2	4	11	74	15	1
16	0	9	4	15	10	8	78	2	5	6	75	14	6
17	0	9	11	16	10	1	79	2	6	1	76	13	11
18	0	10	6	17	9	6	80	2	6	8	77	13	4
19	0	11	1	18	8	11	81	2	7	3	78	12	9
20	0	11	8	19	8	4	82	2	7	10	79	12	2
21	0	12	3	20	7	9	83	2	8	5	80	11	7
22	0	12	10	21	7	2	84	2	9	0	81	11	0
23	0	13	5	22	6	7	85	2	9	7	82	10	5
24	0	14	0	23	6	0	86	2	10	2	83	9	10
25	0	14	7	24	5	5	87	2	10	9	84	9	3
26	0	15	2	25	4	10	88	2	11	4	85	8	8
27	0	15	9	26	4	3	89	2	11	11	86	8	1
28	0	16	4	27	3	8	90	2	12	6	87	7	6
29	0	16	11	28	3	1	91	2	13	1	88	6	11
30	0	17	6	29	2	6	92	2	13	8	89	6	4
31	0	18	1	30	1	11	93	2	14	3	90	5	9
32	0	18	8	31	1	4	94	2	14	10	91	5	2
33	0	19	3	32	0	9	95	2	15	5	92	4	7
34	0	19	10	33	0	2	96	2	16	0	93	4	0
35	1	0	5	33	19	7	97	2	16	7	94	3	5
36	1	1	0	34	19	0	98	2	17	2	95	2	10
37	1	1	7	35	18	5	99	2	17	9	96	2	3
38	1	2	2	36	17	10	100	2	18	4	97	1	8
39	1	2	9	37	17	3	101	2	18	11	98	1	1
40	1	3	4	38	16	8	102	2	19	6	99	0	6
41	1	3	11	39	16	1	103	3	0	1	99	19	11
42	1	4	6	40	15	6	104	3	0	8	100	19	4
43	1	5	1	41	14	11	105	3	1	3	101	18	9
44	1	5	8	42	14	4	106	3	1	10	102	18	2
45	1	6	3	43	13	9	107	3	2	5	103	17	7
46	1	6	10	44	13	2	108	3	3	0	104	17	0
47	1	7	5	45	12	7	109	3	3	7	105	16	5
48	1	8	0	46	12	0	110	3	4	2	106	15	10
49	1	8	7	47	11	5	111	3	4	9	107	15	3
50	1	9	2	48	10	10	112	3	5	4	108	14	8
51	1	9	9	49	10	3	113	3	5	11	109	14	1
52	1	10	4	50	9	8	114	3	6	6	110	13	6
53	1	10	11	51	9	1	115	3	7	1	111	12	11
54	1	11	6	52	8	6	116	3	7	8	112	12	4
55	1	12	1	53	7	11	117	3	8	3	113	11	9
56	1	12	8	54	7	4	118	3	8	10	114	11	2
57	1	13	3	55	6	9	119	3	9	5	115	10	7
58	1	13	10	56	6	2	120	3	10	0	116	10	0
59	1	14	5	57	5	7	121	3	10	7	117	9	5
60	1	15	0	58	5	0	122	3	11	2	118	8	10
61	1	15	7	59	4	5	123	3	11	9	119	8	3
62	1	16	2	60	3	10	124	3	12	4	120	7	8

Income.	Tax.			Income, less Tax.			Income.	Tax.			Income, less Tax.		
£.	£	s.	d.	£	s.	d.	£.	£.	s.	d.	£.	s.	d.
125	3	12	11	121	7	1	700	20	8	4	679	11	8
130	3	15	10	122	4	2	800	23	6	8	776	13	4
140	4	1	8	135	18	4	900	26	5	0	873	15	0
150	4	7	6	145	12	6	1000	29	3	4	970	16	8
160	4	13	4	155	6	8	2000	58	6	8	1941	13	4
170	4	19	2	165	0	10	3000	87	10	0	2912	10	0
180	5	5	0	174	15	0	4000	116	13	4	3883	6	8
190	5	10	10	184	9	2	5000	145	16	8	4854	3	4
200	5	16	8	194	3	4	6000	175	0	0	5825	0	0
300	8	15	0	291	5	0	7000	204	3	4	6795	16	8
400	11	13	4	388	6	8	8000	233	6	8	7766	13	4
500	14	11	8	485	8	4	9000	262	10	0	8737	10	0
600	17	10	0	582	10	0	10000	291	13	4	9708	6	8

FRACTIONAL PARTS OF A POUND.

s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
2 11	5 9	8 7	11 6	14 4	17 2
1d.	2d.	3d.	4d.	5d.	6d.

ANCIENT SYSTEM OF IRRIGATION.—The fertility of Babylonia has been the theme of all ancient writers. Herodotus remarks, that this province and the rest of Assyria were by Darius constituted the ninth satrapy of his empire, and that it contributed a full third part of the revenues of the state. This great productiveness did not arise from the soil in its natural state, for at this day it produces little besides a scanty sprinkling of tamarisks, thorns, or salsugineous plants. It was effected by the wisdom of a judicious monarch, who, aiding the efforts of an industrious people, supplied the means of irrigation from the periodical floods of the Euphrates and Tigris. The same historian, Diodorus, and others, inform us of great hydraulic operations being conducted by several sovereigns of Babylon; and of these the magnificent system of canals by which the flat surface of the land was divided into sections, all within reach of the water, was no doubt the most important. The traveller in passing over the surface of the country, now almost a desert, meets every where with vestiges which prove how completely traversed it once was by such arteries of fructification. It is remarkable, too, that all these canals, instead of having been sunk in the earth like those of the present day, were entirely constructed on the surface,—a fact which proves not only the superior skill of the engineers of antiquity, but the infinitely greater attention paid to agriculture in those times by farmers or peasantry. By what means the water was raised to fill these conduits, does not in every case appear; whether by dikes thrown across the river, or by depressing its bed at the point of derivation. The former expedient was certainly adopted in many instances on the Athem, on the Diala, on the Tigris above Samarra, and on the Euphrates near Hit. But it must be recollected that the country contiguous to both rivers, and the Euphrates in particular, was protected by embankments from the periodical rise of their streams, a measure which, by confining the water, raised it so as to fill these canals. In this manner they served the double purpose of vents for drawing off the dangerous superabundance of the fluid and collecting it for the beneficial purpose of irrigation.—*Edinburgh Cabinet Library. No. XXXII. Mesopotamia and Assyria, Ancient and Modern.*

ATTILA, WINNER OF THE DERBY, 1842.

THE PROPERTY OF COL. ANSON.

Attila, entered for the Derby by Col. Hancox, was got by Colwick, out of Progress (sister to Pilgrim), by Langar, her dam by Blacklock, grand-dam by Knowsley, out of Surveyor's dam. Progress is also the dam of Evelyn,* now the property of Lord Henry Seymour. Colwick was bred by the late Mr. Beardsworth in 1828, and was by Filho da Puta, out of Stella, by Sir Oliver, her dam Scotilla, by Anvil out of Scota, by Eclipse, Herod, &c. Last year he covered a large number of half-bred mares, belonging to Lord Chesterfield's tenants, at merely the groom's fee (a crown); he was then put into training, ran for the Goodwood Cup, but was not placed. This season he has been covering Lord Exeter's mares at Burleigh.

1841: At the Pottery, Aug. 3, carrying 8st. 5lb., won the Champagne Stakes of 20 sovs. each, h. ft., with 50 added, T.Y.C., 10 subs., beating Gipsey Queen, 8st. 2lb.; Marion, 8st. 2lb.; and the following, which were not placed:—Valentina, 8st. 2lb.; John o' Gaunt, 8st. 5lb.; and Combermere, 8st. 5lb.; won by half a lengh; betting, 5 and 6 to 4 agst. Attilla, 7 to 4 agst. Marion, 3 to 1 agst. Valentina, and 4 to 1 agst. Gipsey Queen; Marion slipped and lost several lengths. At Doncaster, Sept. 13, carrying 8st. 7lb., won the Champagne Stakes of 50 sovs. each, h. ft., Red House in, 26 subs., beating Cabrera, 8st. 7lb.; Sally, 8st. 5lb.; and the following, which were not placed—Idolatry, 8st. 5lb.; Playfellow, 8st. 7lb.; and f. by Bay Middleton, out of Miss Fanny, 8st. 5lb.; won by half a neck, Cabrera having had a bad start: betting, 2 to 1 agst. Miss Fanny filly, 5 to 2 agst. Attila, 4 to 1 agst. Idolatry, 6 to 1 agst. Cabrera, and 9 to 1 agst. Playfellow. At the same meeting, carrying 8st. 7lb., won the Two-year-old Stakes of 20 sovs. each, h. ft., T.Y.C., 30 subs., beating Sally, 8st. 4lb.; Skipton, 8st. 7lb.; and the following, not placed—Cattonite, 8st. 7lb.; f. by Langar, out of Mermaid, 8st. 4lb.; Belcœur, 8st. 4lb.; Foxberry, 8st. 7lb.; Brother to Garland, 8st. 7lb; Beeswax, 8st. 7lb.; and filly by Bay Middleton, out of Miss Fanny, 8st. 4lb.; won in a canter by two lengths, Attila having the best of the start, and Skipton being the last from the post: betting, 5 to 2 on Attila, 9 to 2 agst. Skipton, 9 to 2 agst. Foxberry, and 6 to 1 agst. Belcœur. At the Newmarket Second October Meeting, carrying 8st. 7lb., won the Clearwell Stakes of 30 sovs. each, 20 ft. T.Y.C., 29 subs., beating Wiseacre, 8st. 7lb.; c. by the Colonel, out of Hester, 9st.; Robin, 8st. 7lb.; and Guzelle, 8st. 5lb., by a length: betting, 7 to 4 agst. Wiseacre, 9 to 4 agst. Attila, 7 to 2 agst. Robin, and 6 to 1 agst. Hester.—1842: At the Newmarket First Spring Meeting, won a sweepstakes of 100 sovs. each, D. M., beating Palladium by six lengths, and the Devil-among-the-Tailors by twenty: betting, 7 to 2 on him. And won the Derby, beating Robert de Gorham by two lengths and 22 others.

MANGEL WURZEL.

The following communication is from C. Hillyard, Esq., the author of Practical Farming and Grazing:—

The growth of this valuable root appears to be annually increasing, although, in the generality of seasons, there is more trouble and expense in producing it than there is in Swedish turnips; and as it can never be so generally useful for cattle and sheep, there probably never will be half the number of acres appropriated to its growth as there will be to Swedish turnips.

I have been a grower of mangel for about thirty years, and have myself attended to all the operations necessary for its good cultivation; and, after having annually fed many beasts in the stall with it, have come to this conclusion as to its worth, compared to Swedish turnips.

Swedes, if kept from being frozen, are as good for stall feeding till February as mangel wurzel; but, after that time, a given quantity of properly stored mangel wurzel will feed beasts faster than the like quantity of Swedish turnips.

I had in February 1842, twenty oxen in the stalls, feeding on 150 load of fine roots pitted the latter end of October. I had for trial the two roots cut up together, and then saw that not one bit of the turnips was eaten, although as good as possible, till all the mangel was gone.

Although Lord Spencer has given, in the Royal Agricultural Society of England's Journal, a satisfactory account of an experiment made by his Lordship some years ago, on the feeding qualities of mangel wurzel compared with Swedish turnips, it is my intention to give some further proof of the comparative feeding qualities of these two roots.

I have four large working oxen, which I shall graze to the first of November, when they shall be put in the stalls, two fed on mangel, with the usual quantity of cake or meal, and two on Swedes; the four go to the Christmas Smithfield Market. Of these I will get the best account I can from the butchers who may chance to buy them, of their different weights and qualities of meat. But I hope to be able to give a more satisfactory proof of the comparative value of the two roots, with six Hereford steers wintered in my straw-yard. These, after grazing to the first of November, shall be equally divided, their live weights ascertained, the weights of their carcases computed by measurement; kept in the stalls till the first week in March, three fed on Swedes, three on mangel, and the six carcases with this fair feeding, not prize feeding, exhibited together in Mr. Giblett's shop in New Bond Street.

William Miles, Esq., M.P., has given, in the English Agricultural Society's Journal, a satisfactory statement of the chemical analysis of the different kinds of mangel wurzel; it is therefore unnecessary for me to enter on this subject: but as he has given no information, for the inexperienced cultivators, of the routine of operations necessary for the production of this valuable root, I should have liked to have given you the particulars of the whole of my management in preparing the land for it; the best way of putting the seed into the ground, and securing the roots from injury in a severe winter; but as all this would be too long for a communication in your journal, I must refer those who wish to become cultivators of mangel wurzel to my third edition of "Practical Farming and Grazing."

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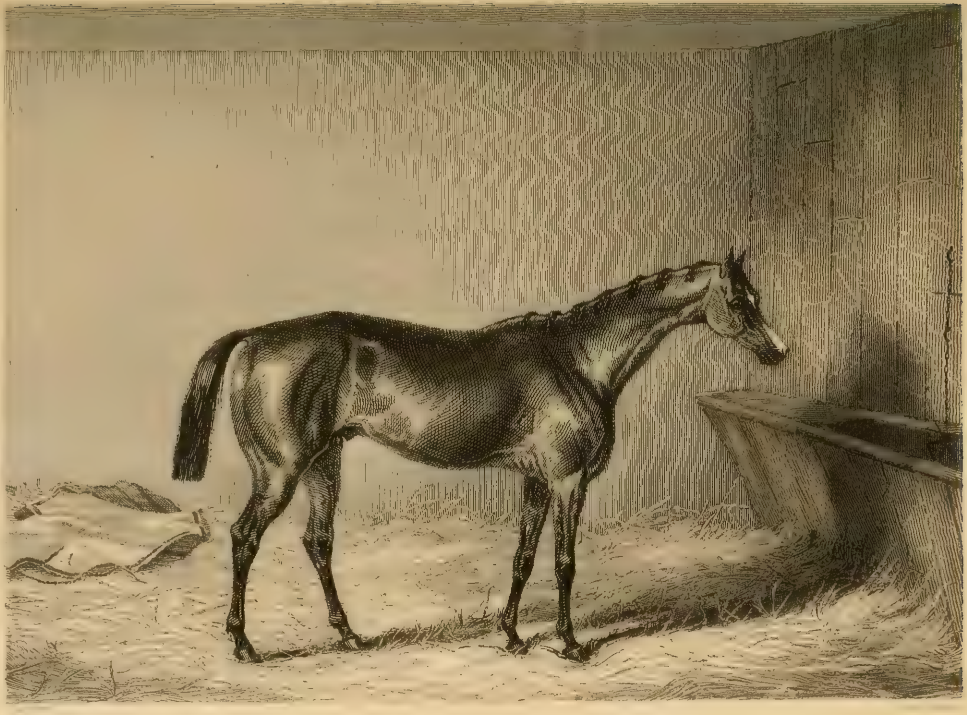
* Lord H. Seymour's stud was sold by auction a few days ago at Sablonville, when Evelyn (four years old) was bought in for 10,000 francs.



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ON AGRICULTURAL CHEMISTRY.

(FROM THE LANCASTER GUARDIAN.)

[*Continued.*]

203. BONES.—There is no improvement in agriculture more generally adopted than the use of bone manure; no part of the animal frame has been more diligently studied by anatomists and chemists than the skeleton; yet obvious as the fertilizing property of bone may now appear, its practical application is of comparatively recent date. Agriculturists are still far from being agreed as to the rules they ought to observe, and the chemist is no less at fault than the farmer on some points. The subject is dry, intricate, repulsive; experience crude and contradictory; yet the inquiry is important, not merely in itself, but in connection with some popular opinions of questionable merit, and will justify, perhaps reward, a minute and patient investigation.

204. If we overlook for the present the marrow or fatty matter as foreign to its constitution, we may regard *mere bone* as consisting of two portions, an earthy *calcareous* matter, and a glue or cement uniting the earthy parts together, and affording a jelly to boiling water. This is by some authors named the *animal* matter, by others it is termed "*cellular* tissue." It will be found to consist principally of *gelatine*. The proportions of these constituents vary considerably in different animals, at different ages, and even in different parts of the same bone; but for our purpose it may be stated that usually the calcareous matter bears to the gelatine or animal matter nearly the proportion of two to one. We can burn away all the cellular tissue to obtain the calcareous matter separately; or we can dissolve out the calcareous to obtain the animal matter. By the former process bone loses one-third of its weight, by the latter two-thirds almost exactly.

205. If, instead of wood (7, 8), we put a piece of bone into a gun barrel slightly closed at one end, and heat it red hot for a considerable time, there is an escape of smoke as before, but the smoke is not the same, it emits a suffocating smell peculiar to bone, hair, feathers, &c., and if collected would afford an impure solution of ammonia, mixed with a kind of burnt oil. The ammonia indicates the presence of an azotised matter in the bone; the expulsion by heat forbids us to expect that we shall find any appreciable quantity left in the charcoal remaining in the gun barrel after this process is completed. If we now pursue the experiment (9) and expose the bone charcoal taken out of the gun barrel to heat in the open air, we shall finally reduce it to a white ash, weighing from one-half to two-thirds of the bone, according as the latter had been previously deprived of its oil, marrow, &c. The abundant earthy ash thus procured, is calcareous matter, *i. e.* lime united with a small quantity of carbonic acid, a much more minute, sometimes an inappreciable quantity of fluoric acid, and a large quantity of phosphoric acid. In other words the earth of bone consists principally of phosphate of lime, with more or less of the carbonate and sometimes a little fluate of lime. Magnesia, silica, alumina, manganese, and iron, have also been detected in the analysis of bone, but we need trouble ourselves with none of the earthy ashes except the phosphate of lime—the carbonate having been frequently considered already, and the other ingredients being too rare and unimportant to require notice.

206. There is a tasteless substance called GELATINE sold in the shops, and sometimes cooked for sick people, which has the property, when dissolved in hot water, of affording a specious looking jelly, possessing, as we shall show, no good property whatever as an article of food—loathed by the dogs, despised by the rats, and finally, after a trial of almost half a century, abandoned in the best hospitals of France, on the report of a commission of philosophers of the highest eminence, Thenard, Dumas, Magendie, &c., who devoted ten years to an inquiry so interesting to humanity and to science. This gelatine, par excellence, is principally obtained from the animal matter of bones, sometimes by stewing them for days together in a digester, but more recently and more scientifically by another process. The bone is steeped in muriatic acid diluted with water; the acid is changed from time to time as it becomes saturated with the calcareous matter, which it has the property of dissolving, until at length the bone loses its former appearance by parting with its earthy material. It retains its shape, however, but has become soft and almost transparent; it is now washed to deprive it of any acid, and can be dissolved in hot water, boiled down carefully, and dried into GELATINE. If caustic ammonia be added to the muriatic acid thus employed, the phosphate of lime can be obtained—of this hereafter.

207. The most remarkable character of bone, under ordinary circumstances, is the extreme durability, not merely of the calcareous portion, but of the gelatine itself, a substance very liable to spontaneous decomposition (211, 215). Another character not less remarkable is, that the same bones which in their entire state remain unchanged for centuries will, when reduced to powder, ferment and decay very rapidly. It would appear as if in the former case the calcareous matter exerted some chemical influence, preventing the solubility, and retarding the decomposition of the gelatine, whilst on the latter the gelatine obeying the laws of inorganic chemistry, acted as a ferment, inducing chemical change in the calcareous portion also. Other circumstances, which are found to modify the processes of fermentation, combustion, &c., may undoubtedly operate here; we care very little for any theory, but invite the reader's attention to the facts we shall bring together.

208. "In the lowest strata organised remains contain none of their original bony matter; but in proportion as the formations or depositions may be supposed to be more recent, more of the original matter of the bone or shell is found in them. The remains of the animals of the saurus or lizard kind, found in the limestones of Sussex or Dorsetshire, contain very little animal matter (gelatine), but much phosphate of lime (earthy matter); those in the Kirkdale cave contain almost all their phosphate of lime, but have lost a considerable portion of animal matter; whilst the bones dug up at Trasimene or Herculaneum, differ very little from recent bones."—*Sir H. Davy.* At the time of delivering the eloquent addres which contains the foregoing passage, Dr. Buckland was of opinion that the animals whose remains were found at Kirkdale lived before the deluge, and Sir H. Davy, after visiting the cave, entertained no doubt of the general accuracy of his conclusions. Dr. John Davy has analysed very many kinds of bone—some

of great antiquity. A piece of bone after being exposed to the air two years contained 65.2 per cent. of calcareous matter, and 34.8 of animal matter. He found the bone of Lorenzo, a blood horse, and that of an under-bred troop horse, exactly alike—the one containing 65.77, the other 65.78 per cent. of calcareous matter. He analysed portions of two skulls, the one more than 2000 years old, from a Greek tomb, the other not less than 3000 years old, from Upper Egypt. The former contained 73.8 of calcareous and 26.2 of animal matter, the latter 76.1 and 23.9. A Roman bone found at Pompeii contained 64.5 and 35.5. So wonderful is the durability of bone, not merely of its calcareous portion but of its azotised or animal matter, usually so liable to spontaneous decomposition.

209. The report of the commissioners on gelatine already referred to, (206) abounds with facts and observations at once amusing and instructive, we will therefore make no apology for digressing a little from the dry and bare subject of our present inquiry for the purpose of considering some passages of that Report, and the documents appended to it. (*Conples rendus, Tom* xiii., *No.* 5.

210. In 1680 M. Papin, a French physician in London, announced the invention of his celebrated digester, by means of which he said he was able to soften bones, and to cook all kinds of animal food in a manner superior to any known at that time, so that he could make any tough old cow as tender and well flavoured as the very best beef. The apparatus contrived to perform these wonders was tried by the French academicians of that day: it was not found able to transform the old cow into good beef, but it showed that bones contained in their substance a great quantity of jelly, more than muscular flesh. From that time forward bones came to be considered mines of food, and jelly the most nutritious diet of all. These opinions grew with time; the most eminent philosophers occupied themselves in devising means of extracting and employing the jelly of bones. At the commencement of the French revolution the government of that country proclaimed to the world that "every bone is a dish of broth prepared by nature."—"A pound of bones yields as much broth as six pounds of meat."—"The broth from bones is preferable to the broth of meat."—"A comb, the handle of a knife, a dozen bone buttons, are so many dishes of broth stolen from the poor." At this period—24 messidor, an x.—everything conspired to enhance the popularity of gelatine; but, from some cause or other, both rich and poor gave a decided preference to broth from flesh. The new invention was introduced into the great hospitals, but the bone broth could not maintain its ground; it was laid aside by one institution after another, on various pretexts, but particularly because the patients did not like it. The reasons for rejecting the solution of gelatine at the Hotel Dieu of Paris were detailed in a special report of the medical officers and others connected with that magnificent establishment.

211. This report states that broth containing gelatine is of bad quality, and *grows putrid sooner than that prepared in the old way*. That its taste is disagreeable, quite disgusting, that it is indigestible; that it affords less nutriment than broth made by the ancient process, the nutritious matter it does contain is of inferior quality. That gelatine from bones, dissolved in water is cloudy and viscid, has a decidedly nauseous smell and taste which continue for a long time, that it putrefies very rapidly, &c. Taken into the stomach even in small quantity, flavoured by salt and vegetable juices, it causes nausea, thirst, and other inconveniences. That the solution of gelatine imparts its own properties to every thing with which it is mixed; that the broth containing gelatine from bones is unwholesome for persons in health and much more so for invalids; that any economy that may appear to result from the use of gelatine from bones is annihilated by the facility with which it is spoiled and wasted. The apparatus was accordingly suppressed, but not until M. Souberain had been consulted. Mon. S. gave his opinion that the obtaining of gelatine by muriatic acid was preferable to the use of Papin's digester.

212. M. Donne, a great advocate of gelatine, made it into strong jelly, for himself, with sugar, lemon juice and spirit. For his dogs he mixed it with salt and fat. A diet of this jelly with bread reduced the weight of Mons. Donne two pounds in six days, during which time he was tormented with a constant sense of hunger and faintness which was only assuaged by a dinner. The two dogs belonging to M. Donne refused the gelatine in every form for several days, and would have pined to death of hunger rather than eat it.

213. One M. Gannal, a manufacturing chemist, observing that the rats on his premises, though by no means nice in their choice of food, invariably respected his gelatine and his glue, began to entertain some doubts as to the nutritive properties of these substances, and after reading M. Donne's remarks, resolved to undertake a series of experiments to elucidate this important question. His results were very decisive. He found it impossible to subsist upon gelatine though flavoured with aromatics, and made agreeable to the taste. It soon impaired the health, causing head-ache, faintness, and other unpleasant symptoms, which however, were dispelled by ordinary diet. He found that he could subsist for a time upon bread and gelatine, though these caused intense thirst, and on trying bread and water instead of bread and jelly he found himself less oppressed and more at his ease. He could not continue his experiments for any length of time, as all those who were so honourably engaged soon experienced such a disgust for the gelatine that it was impossible to continue the use of it under any form.

214. M. Edwards and M. Balzac also subjected dogs to experiments. They ascertained that these animals would live upon white bread and a soup of horseflesh, but not upon bread and gelatine. One dog, reduced in strength and weight by a diet of bread and gelatine, began to recruit after taking four spoonfuls of good broth in addition. Many other trials showed the nourishing property of broth and of a jelly from the joints of animals (chondrine), to be much superior to that of gelatine from bones. Dogs, supplied with gelatine only, lived no longer than those from which every kind of food was withheld. After trying the gelatine for a few days in various forms, the wretched animals loathed it altogether and died. Some of them preferred eating one another to tasting the gelatine. Dogs kept upon jelly from the *heads* of sheep and oxen soon fell away; those fed with jelly from the *feet* of those animals retained their condition. The former mess was absolutely refused after five or six days; the dogs continued to feed upon the latter with avidity. But mere gelatine, separate from other matters, whether obtained

from the feet or from the heads, was equally rejected.

215. In every public establishment where bone jelly was employed, the greatest inconvenience resulted from its tendency to spoil. The vessels containing it required to be washed with chloride of lime, as well as with hot water. The cleanest vessels in which this article of food was carried out fresh, to the distance of twelve or thirteen hundred yards, were found to have become quite offensive before they were brought back again. This agrees with the fact that jelly of a more palatable and nutritious kind, yielded by veal, chickens, &c , has also the inconvenience of soon becoming unsafe in damp and warm weather; it will disturb digestion long before it has acquired any unpleasant taint.

216. We learn from Sir H. Davy's sixth lecture, that bones were, in his time, much used as manure in the neighbourhood of London. After being broken and boiled for grease they were sold to the farmer. "*The more divided they are, the more powerful are their effects. The expence of grinding them in a mill would probably be repaid by the increase of their fertilizing power ; and in the state of powder they might be used in the drill husbandry, and delivered with the seed in the same manner as rape cake.*" Very little practical information on this subject has been obtained since these sagacious remarks were made; but we are now prepared to inquire for a reason why there should still be that diversity of opinion which prevails as to the value of bone, and of its constituent parts.

217. We consider it to be proved that an entire bone is a very indestructible thing, but that the gelatine when separated from the calcareous portion soon ferments and decays. The calcareous matter itself, when exposed to the action of water, holding even carbonic acid in solution, is acted upon to a certain extent, quite sufficiently to make it capable of being taken up by the roots of plants. Other acids act still more powerfully upon it ; and if the muriatic or the sulphuric acid can ever be profitably employed in agriculture, which, by the way, is very much to be doubted, one of the most promising plans for their use would seem to be indicated by their action upon bone. Liebig has pointed what he considers the best method of applying these acids.

218. Twenty kilogrammes (48lbs.) of recent bones applied to an arpent of 2400 metres (2670 square yards) would supply it with phosphates sufficient for three crops of wheat, clover, or beans. The state (of division) in which they are applied is not unimportant, the more completely they are reduced to powder and mixed with the soil the better they will be assimilated by plants. The most suitable process, beyond doubt, will be to reduce the bones to fine powder, and digest them for some time on half their weight of sulphuric acid mixed with three or four times the quantity of water, to dilute the paste produced in 100 parts of water, and sprinkle the soil with this acid liquid before ploughing it. In this manner the free acid would instantly combine with the bases in the soil, and would diffuse a neutral product uniformly through it. Trials made with this new fertiliser on a soil of grauwacke have shown that far from being injurious to corn or leguminous plants, it promoted their growth in the happiest manner.

219. In this process the phosphoric acid is disengaged from the lime by the sulphuric—in other words gypsum is formed instead of the bone earth; the phosphoric acid, set at liberty, mixes with the water and is poured upon the soil, where it is taken for granted that it will again provide itself with lime to form an insoluble bone earth more finely divided than before. This, however, ought not to be left to chance; care should be taken to ascertain previously that the soil upon which the experiment is tried is sufficiently stored with calcareous matter upon which the phosphoric acid can act, such as limestone, chalk, shells, &c. But it is probable that bones may be wanted in soils of a different nature; in this case, and indeed whenever the sulphuric acid is used, it ought to be subsequently mixed with a compost containing slaked lime or chalk.

220. "In the manufacture of gelatine," Liebig goes on to say, "many thousands of quintals of a solution of the phosphates in hydrochloric (muriate) acid, are thrown away every year. It is important to inquire how far this solution might supply the place of bones. It is probable that the free hydrochloric acid would combine with the lime in the soil, and thus form a soluble salt, which has long been known to exercise a beneficial influence on vegetation. The chloride of calcium (muriate of lime) is, in fact, one of those salts which powerfully attract and retain the moisture of the air, so that it may perfectly well take the place of gypsum as a stimulant ; for, like that substance, it is decomposed by carbonate of ammonia, forming sal ammoniac and carbonate of lime.

221. "A solution of bones in hydrochloric acid, spread upon the soil in autumn or in winter, would not merely supply the soil with an indispensable principle, but would communicate to it the faculty of retaining all the ammonia.

222. "A time will arrive when instead of employing manures as at present, we shall fertilise the fields with a solution of silicate of potash, with ashes from straw, with phosphates prepared expressly in manufactories, &c. Agriculture will then attain the point at which medicine has already almost arrived. Chemical principles are substituted for a vast variety of medicines whose marvellous virtues could not formerly be explained. Iodine, quinine, morphia, are now administered instead of burnt sponge, Peruvian bark, and opium, which, as experience has shown, owe their efficacy entirely to these principles."

223. The foregoing extracts are consecutive sentences occurring at page cliv. of the celebrated author's introduction to his treatise on organic chemistry.—(*French translation*)

224. The solution of bone earth in muriatic acid, if it could be procured at a cheap rate, would yield phosphate of lime in a state of minute division on being mixed with a solution of caustic ammonia. The latter may be obtained from gas liquor, by the addition of lime, as will be shown hereafter.

225. With regard to chloride of calcium (muriate of lime) the benefit promised by M. Liebig (221) will not be realised. The muriate of lime is a very deliquescent salt; it runs to water in a very short time when exposed to the air. If poured upon the soil the solution of muriate of lime cannot remain there a day, much less a week or a month; it will sink away into the ground more and more diluted with water by every shower, and will vanish as completely as the common salt which the housemaid has thrown

upon ice in the street. The same objection will apply to the proposed use or rather waste of the solution of bones or muriatic acid (222). It is the object of a farmer to supply plants with food not with medicine (223). We have heard of a nobleman who, confident in the ultimate triumphs of science, declared his belief that the time would arrive when his friend the farmer might carry out the manure for a whole field in a waistcoat pocket. Yes, replied the farmer, and I shall then bring back the crop in the other pocket. At present we would not advise our agricultural friends to anticipate a very early arrival of Professor Liebig's millennium. Contrasted with the speculations of the chemist of Giessen, how admirable is the modest simplicity and practical wisdom of the founder of Agricultural Chemistry, whose brief and pithy sentence we have quoted (217.)

226. But in order to account for the different action of bone under various circumstances, we are to remember that it consists of three portions, the oil or fat, the gelatine, and the phosphate of lime, of which each produces a different effect, and all are necessary to produce the full influence of bone manure. We will consider the action of each successively, in the order abovementioned, supposing the bone to be of good quality, possessing a due portion of each constituent, and to be applied in such a manner as to yield every thing it contains to the soil.

227. The seeds of many plants contain a portion of fixed oil, which is consumed in the process of germination; the seeds of other plants have been found to be much benefited by being steeped in oily liquids before the time of sowing. It is not perhaps so much a chemical as a physiological observation of Virgil, that it is a good practice to sprinkle upon the seeds of leguminous plants the dregs of oil and natron, or carbonate of soda, not merely to make the seed grain swell. but to insure full pods at harvest and large seeds for future use, doubtless a very desirable object.

"Semina vidi equidem multos medicare serentes
Et nitro prius, et nigra perfundere amurca
Grandior ut fetus siliquis fallacibus esset."—
Georg. I., 193.

228. Rape cake and bone dust are found to be valuable manures when sown along with seeds, especially of the turnip. It is probably its oily matter that is the most efficient part of bone dust so applied. And as the ancients mixed their dregs of oil with an alkaline salt for the purpose, no doubt of rendering it easily soluble, it is more than probable that a previous fermentation of the bone dust, by developing some ammonia, produces a similar effect upon the oily matter. We consider, therefore, that the most economical method of using bone must be to drill it with the seed, fresh and recently ground—not deprived of its oil by previous boiling. In this way the oil will be soon but profitably exhausted.

229. The gelatine, being very little soluble in cold water, is far more slowly consumed, and in the process of its decay gives out elastic gases, which serve to break down the calcareous matter or phosphate of lime; it serves also as a ferment, and communicates a tendency to decay, not merely to the calcareous phosphate, but to all the inert and half-decomposed vegetable substances in its vicinity. Bone will retain this property so long as any undecomposed gelatine remains; and its effects will be renewed whenever the soil is moved so as to admit an access of air, until at length nothing is left of the original material but the phosphate of lime.

230. The substance called phosphorus in a state of combination with oxygen forms phosphoric acid. The acid combined with lime, magnesia, and more rarely with other bases, is very extensively distributed through the animal and vegetable kingdoms, being evidently subservient to most important purposes, though some of these are still veiled in deep obscurity, the subject of conjecture and inference rather than actual demonstration. For although the phosphate of lime constitutes the principal portion of bone, though salts of phosphorus are abundant in some animal fluids, yet in the vegetable kingdom, in the brain, and some other soft parts of animals, the quantities of phosphoric salts is extremely minute. Still we have abundant evidence that, like azote, phosphorus, in combination with other elementary substances, is a powerful and active agent in the organisation and disorganisation of animals and plants. It is essential to their health and growth when living, and after their death it promotes their rapid decomposition.

231. It would be tedious to enumerate all those vegetables and parts of vegetables in which the existence of this substance has been detected. From its peculiar chemical properties it must frequently elude the chemist's search. This is true, even of inorganic matter of the soil itself, in which the detection and separation of the phosphates is still a "difficult problem."

232. "Phosphoric acid is disseminated in some form or other throughout our clayey soils, though in very small and variable quantity. It is most probable that in these soils a portion of the acid, at least, is in combination with the alumina in the state of phosphate. One of the most difficult problems of analytical chemistry is to effect a perfect separation of a small proportion of phosphoric acid from alumina, and rigorously to estimate its quantity; hence in the greater part of the analyses of soils hitherto published, this most important ingredient in a fertile soil (the phosphoric acid), when in combination with, or in presence of alumina, has either been altogether neglected, or rudely guessed at, or indicated by a rough approximation only. We have no direct proof, therefore, of the extent to which the phosphates of alumina exist in different soils." *(Johnston's Lectures, Lect.* x., *p.* 302.*)*

233. We may observe, in passing, that bones frequently disappoint the hopes of the husbandman when applied upon clays. The foregoing extract from the instructive lectures of Professor Johnston suggests two reasons for this. In the first place it is shown that clay usually contains more or less of phosphoric acid, in some state of combination. A very small quantity of this acid seems to be required by plants, and therefore any additional supply of bone earth may be superfluous. Secondly, phosphoric acid, in combination or in the presence of alumina, baffles the re-agents of the chemist, may it not in such circumstances equally puzzle the roots of a plant?

234. "In all the vegetable ashes that have been hitherto examined phosphoric acid has been detected, united with alkalies and alkaline earths: the greater number of seeds contain a certain quantity; those of bread corn, especially, abound in phosphoric acid combined with magnesia. To grain the phosphate of magnesia is an essential

principle, without which it can neither grow nor ripen."—*Liebig*, S. 105. The author adduces instances of large concretions of phosphate of magnesia and ammonia, found in the digestive organs of horses fed upon hay and oats, in proof of the quantity of this phosphate existing in grain. On the other hand, Professor Johnston seems to retain the current opinion that it is the phosphate of lime—not of magnesia, which forms a constituent portion of most kinds of grain. "It exists in the seed of many plants, in all the varieties of grain, and in the ashes of the more common plants. The ashes of leguminous, cruciferous, and composite plants, are especially rich in this compound." P. 289. Of the phosphate of magnesia, the same distinguished chemist says—"In most soils it is probably present, in minute quantities, since in the ashes of some varieties of grain it is found in very considerable proportion." P. 299.

235. Bone earth and phosphate of lime are generally used as synonomous expressions, but in fact the lime is found united with a little carbonic acid, and the phosphoric acid with a little magnesia, and perhaps ammonia; we need not attend to any other constituents than the phosphoric acid and the lime, which we have supposed to have lost their former concomitants, the oily and the gelatinous matter. (229).

236. It has been stated (165) that M. M. Boussingault and Payen consider the *calcareous* matter of bones obtained from the residue of glue (or gelatine) manufactories, as producing no sensible influence on vegetation. These eminent philosophers have instituted numerous experiments for the purpose of ascertaining the relative value of different substances used as manure, and have constructed a table of agricultural equivalents of much interest, as indicating in various substances the relative quantity of *azote* which those gentlemen seem to consider the sole fertilizing ingredient; they leave out of their calculation the carbonaceous matter, the alkalies, and in the instance of bone, the calcareous matter. We must therefore take their tables with considerable allowances; they are still extremely valuable, and may be consulted with much advantage by the agricultural philosopher. The original memoir is published in the third volume of the *Annales de Chemie et de Physique*, 1841, p. 65—it is given in an abridged form in the *Comptes Rendus*, *Tom* xiii., No. 6, p. 323; and is noticed in a lecture of very great merit in the *Farmer's Magazine* for March last, p. 160.

237. On the other hand, boiled bones, as we learn from Sir H. Davy (205), have long been used with advantage in certain situations, and Professor Johnston informs us that they act more quickly upon the land, but are not so permanent in their effects. (291.) The unboiled bones bring nearly double the price of those that are boiled. This, he thinks, "may be owing to their not being so perfectly dry as the unboiled bones. Being thus moist, they contain in the same weight a comparatively smaller quantity both of animal gelatine and of the earthy phosphate, while they will also be more susceptible of speedy decomposition, when buried in the soil."

238. In various parts of the country, farmers can point out portions of land, formerly under the plough, but now in ancient pasture or meadow, upon which bone has been formerly applied in particular places by way of trial. These places exhibit, at all seasons, a better appearance than the rest of the field, a more luxuriant vegetation, and superior kind of herbage, showing the durable improvement resulting from the use of bone when by skill or accident it has been consigned to a right soil. In other districts entire fields will be shown, where large sums have been expended on bone without much manifest improvement. We must look to the constitution of bone, and the changes it undergoes by different processes for an interpretation of these apparently contradictory results.

239. The facts stated by Sir H. Davy (216), and those observed by M. M. Boussingault and Payen (236), may be reconciled, if we remember that in the one case the bone has been merely deprived of its oily matter by boiling, whilst in the other, most of the gelatine also has been extracted by violent heat long continued. There can be no doubt of the necessity of the gelatine, or some substitute for it, in breaking down the phosphate of lime. Hence also the short effect of boiled bones noticed by Professor Johnston (237); these, deprived of their oily matter, and softened by boiling, are placed in circumstances calculated to promote the rapid combustion of the gelatine, and this being soon expended, the bone earth becomes, so to speak, quite indigestible by the growing plants. The gelatine in such a state of increased activity induces a proportionate decomposition of organic matter in the soil, and forces one or two good crops, but in so doing tends to produce exhaustion in the soil, not its amelioration; there will remain indeed an abundance—an excess perhaps—of phosphate of lime, but this substance in itself goes for little. The land where bone has not been found profitable, either contained it previously in sufficient quantity or exerted some antisceptic influence upon it, perhaps, as Professor Johnston has shown, by a chemical action of alumina, more frequently perhaps by the closeness of its texture excluding the warmth and air necessary for its decomposition. The durable good effect of bone upon some pastures is owing to the slow and constant decay of this substance, and its equally constant restoration to the soil in a soluble form by the animals feeding upon the produce. Lastly, the reason why a second application of bone rarely succeeds so well as the first, may be seen in the small quantity of bone earth required by plants, its indestructible nature when once incorporated with the soil, and the numerous sources from which it is constantly, though sparingly and almost unconsciously, supplied to the land on every well-managed farm.

240. Bones reduced to powder and moistened, soon begin of themselves to ferment and acquire a state of incipient decomposition favourable to their most early and powerful influence on vegetation. Where this begins to fail from the consumption of organic matter, it is probable that the application of rape dust would revive it. Where rape dust is abundant, the addition of pounded bone seems to promise a favourable result. Where both are at command they would better repay the farmer if used mixed together than if employed separately.

241. We have already (74) intimated some doubts as to the received opinions respecting magnesian lime. It is desirable that this subject should be investigated, especially in reference to the mutual influence of magnesia and phosphoric acid. (234.) Sir H. Davy, though he admits the

correctness of Mr. Tennant's ingenious views of magnesian limestone in its caustic state, adduces numerous and conclusive instances to prove that the carbonate of magnesia is an ingredient in the most fertile soils.

IMPORTATION OF LIVE STOCK.

TO THE EDITOR OF THE MORNING POST.

Sir,—It will be gratifying to many of your readers to know that the skill and enterprise of British farmers has rendered the abandonment of the prohibition of the importation of foreign cattle a consummation rather to be desired than an object of alarm; and that a liberal additional supply of store stock would be advantageous to graziers, would increase the demand for rural labour, and promote the extension of good husbandry.

So long as the operations of graziers were confined to the best quality of grass land, the supply of lean stock was ample; but since improvements in cultivation have caused a large portion of the arable land to be annually appropriated to the growth of roots and artificial grasses, and the consumption of lamb and veal has been enormously increased, the supply of store stock has become inadequate to the demand.

The breeding and rearing of young stock requires an extensive range of summer pasturage, in connection with a supply of winter provender, and the number of occupiers who have food for stock during part of the year being infinitely greater than of those who have at all times a regular supply at command, the larger portion of artificial food is necessarily applicable to the immediate preparation of stock for the shambles.

I do not deny that the number of domestic animals *bred* in this country has been extensively increased, in consequence of the additional quantity of vegetable productions, but it is capable of proof that the number *reared* has not been in proportion to the quantity of artificial food, or to the extent to which it has been applied to the fattening of animals.

The result of a comparison between the present mode of finishing stock, and the state in which fatted animals were formerly sent to market, is highly favourable to modern management—they are found to be individually heavier, are fed to a higher degree of perfection, and afford a larger quantity of profitable meat in proportion to their gross weight. Another, and it is presumed a conclusive, proof that the rearing of cattle has not kept pace with the means of fattening them, is the exorbitant price of lean stock compared with the price obtained by the grazier for meat.

Some idea may be formed of the extent of the deficiency by comparing the numbers of cattle sold at Smithfield market with the variation in the population of England and Wales.

In 1801 the population, in round numbers, was		8,873,000
In 1841		15,907,000
Being an increase of		7,034,000
equal to 80 per cent.		
The number of cattle at Smithfield in 1801 was		120,000
In 1841	167,000	
Add for improvement in weight and quality 15 per cent	25,000	
		192,000
Being an increase of		72,000
equal to 60 per cent.		

If the supply of live stock had kept pace with the population, there should have been at Smithfield,

In 1841	216,000 head of cattle.
The actual amount of beef was only equal to	192,000
Showing a deficiency of	24,000

Assuming the supply at Smithfield to represent a seventh part in weight of beef annually consumed in the kingdom, the gross deficiency of cattle in that year, as measured by the population, was 168,000 head. It becomes an important consideration how to provide for the deficiency, and if by importation, to ascertain what description of foreign stock would be least prejudicial to the interest of domestic agriculture.

Lean stock being the raw material or medium for converting into fat meat the different ameliorating crops which prepare the soil for the reception of, and augments its power of producing corn, admits of facilities being afforded to its introduction, which it would be impolitic to extend to fat stock, the latter having attained a state to require no further application of skill or labour; indeed the correct principle would seem to be to admit store stock at a nominal duty, and to impose a fluctuating duty on the admission of fat animals, varying concurrently with the gross weight, in accordance with the duty on dead meat. Abstractedly this would be the equitable mode; but then the question is how to carry it into effect: to weigh each imported animal with the accuracy this plan implies would only be a waste of time, because having done so, the object would still be unattained; even the most simple scheme for regulating the importation of fat stock by weight would be attended with too many impediments to be available. I allude to levying the duty on cattle agreeably to the following scale of proportion:—

	Cwt.		
On oxen weighing less than	6	the duty to be represented by	1
Being 6 and under	9		2
9	12		3
12 and upwards			4

It was expected by this arrangement cargoes of cattle might be classed on landing so as to economise time, and render it unnecessary to pass over the machine more than a very small portion of them; but the difficulty which presented itself was how to define the standard of condition, so as to distinguish cattle liable to the nominal from those chargeable to the fluctuating duty.

The gross weight alone is an imperfect test of condition—the heavier animals are not always the fattest, nor the smaller ones invariably in a lean state; the weight of the carcase or quarters of animals, in different degrees of condition, exhibit considerable variation in relation to their weight alive; the carcase or quarters of oxen, for instance, are found to bear the following proportions to the gross weight:—

	Per Cent.		Per Cent.
A lean ox	46	the offal being	54
Half fat	54		46
Moderately fat	62		38
Extra fat	70		30

It is universally admitted that cattle ought not to be put to rich pastures or to forcing food in a lower state of condition than that denoted half-fat; and, as in many instances they might be preferred at a still higher per centage, it would be obviously impracticable to indicate the scheme of duty to which foreign cattle would respectively be liable.

The best security against the introduction of live stock, in a higher degree of maturity than that in which it would be most desirable for British graziers to obtain it, is the fact of continental husbandry being more generally directed to rearing than to fatting of stock, at least to the degree of perfection requisite for the English market: if to this be added the risk and expense of transporting cattle in a ripe state to a distant country, the depreciation in value consequent upon the transit, and the necessity for their being sold as soon as landed, the domestic feeders of cattle need not fear foreign competition in the article of live stock, in the state of maturity that meat is required for general consumption in this country, and there is undoubtedly less danger to be apprehended from an extensive importation than from a too limited supply of the description of stock that we are evidently in need of. The claim to a higher rate of duty on the importation of live stock than that proposed by her Majesty's Government is consequently wholly untenable.

An indistinct notion seems to be entertained by some that the duty on the introduction of live stock should be equivalent to that imposed upon the introduction of foreign corn; others contend that corn ought to be admitted at a fixed duty, because it has been applied to the introduction of live stock; but the principle which should regulate the duty on cattle and that which should influence the importation of corn are perfectly dissimilar. Corn being imported in a manufactured state, deprives the rural labourers of the value of the employment which the production of the quantity imported transfers to foreigners; and even if articles of British manufacture were taken in exchange for foreign corn, any additional employment conferred by this means on the manufacturing population would necessarily be at the expense of the agricultural labourer; on the contrary, the importation of store cattle creates a necessity for the employment of both capital and labour, in the providing of provender for the stock imported; and it may not be too much to expect the extra cultivation incident to the production of food requisite for the supply of foreign stock, to augment the productive power of the land and cause it to yield a further increase, equal to any deficiency in the present growth of corn.

I am, Sir, your very obedient servant,

LAYTON COOKE.

7, John Street, Adelphi, 1*st July*, 1842.

WINTER BEANS.

SIR,—I never enquired of any farmer in this neighbourhood whether they had tried the winter-bean, without being answered that it was a complete failure; that it was impossible to get a crop; and that the plant never grew above eighteen inches high. My experience, however, convinces me that the defect is not in the plant, but in the want of knowledge in the growers. The bean is of all plants usually cultivated, that of which the proper treatment is least understood. Though it bears the reputation of being an uncertain crop, I have never yet failed in securing an ample produce, even on land that is not naturally favourable to its growth. Two or three rules, in passing, for the culture of the common bean on light land, may not be without their use. If after white corn, plough the stubble in the autumn, and give a second ploughing immediately before sowing. Sow as early as possible; the best time in this part of the country is from the 20th of February to the 1st of March. Always drill, and let the rows be from twenty to twenty-four inches apart. Grudge no labour in horse and hand-hoeing. Choose a prolific variety, such as the Heligoland or the white-eyed bean. Never take it after wheat, because the land is then foul and exhausted, but either after barley, instead of seeds, which is a good change, or on the clover ley, to be followed by wheat.

The following is the description of the winter-bean in Lawson's "Agriculturists' Manual:"—"Height three to four feet; remarkably hardy and prolific; seeds small, very plump and heavy, seldom having the least depression in the sides; same colour as the common bean, but with the addition of a dark greenish spot on the short side, a little below the termination of the small very black eye." For a further account see Baxter's "Library of Agriculture," article "Bean," where this variety is favourably spoken of. In the autumn of 1839 I received a small sample of seed from Messrs. Lawson, of Edinburgh, which I sowed in the garden on the 20th of November (at least a month too late); they made their appearance on the 1st of January, during a severe frost, which continued for about ten days. When the weather became milder, I found that they had not received any injury, as they continued to grow kindly during the winter. Owing to the richness of the soil, and to the gardener having placed the rows too close together, they grew so luxuriantly in the spring and summer as to be much laid before the pods had begun to set; consequently, the produce was not large. As, however, I had quite satisfied myself as to their hardiness, I resolved to try them the following year on a larger scale. For this purpose, I selected part of a barley stubble, not quite an acre, which I manured with about ten small loads of rotten dung. The seed was then drilled at a distance of twenty-four inches, but allowing more seed than usual in each row. The winter was one of the severest which we have experienced for many years, the thermometer falling on one occasion to five degrees below zero, yet the young plants never changed colour or seemed in any way affected by the frost. As, however, they seemed to stand still in their growth during the beginning of May, when the weather was very dry, I earthed them up in the same manner as potatoes, by a plough with a single horse. From that time they shot rapidly forward; they set well, each stalk averaging 25 pods, and one having as many as 42. They were cut perfectly ripe, at least a month before any other beans in the country, and yielded only about three bushels short of six quarters. The produce would have been somewhat larger, if part of the land had not been rather wet and shaded with trees, and as a consequence many of the seeds decayed in the ground, without coming up at all.

Last year I sowed four acres on an oat stubble, which had previously been seeds (not manured). The cultivation was precisely the same as in the former instance, but although the winter has been very unfavourable for them, nothing doing this plant so much injury as alternate frosts and thaws when the land is wet, the crop is very promising. It was in full bloom by the end of April, and is now setting remarkably well. I sincerely hope that no prejudices will prevent farmers from giving a fair trial to this valuable variety, which appears better suited than any other to light, dry soils. The produce is very large, and, from the time of ripening, must be of good quality, and fit for use long before the common bean, which is often not housed till October or November. If the culture which I have described be adopted, they cannot fail of securing a crop. When the soil is retentive of moisture, I should recommend them to be sown on the ridge, like the Swedish turnip, but on dry land the earthing up is invaluable. Begging to assure you of my readiness to afford to your correspondents any further information on this subject which they may require,

I remain, Sir, yours most truly,
WILLOUGHBY WOOD.

Campsall Hall, June 8.

ON LIME.

Lime, for the purposes of agriculture, obtained in this country by exposing limestone, chalk, or the coarser species of marble, to a certain degree of heat in a kiln or furnace of the lime burner—an operation too well known to render any particular description of it necessary in this place; suffice it to say, that by this process the fossil loses its weight upon an average of 30 to 40 per cent., according to the degree or purity of the material from which it is obtained. Æriform acid is separated at the temperature or degree of heat which is required for this operation. This temperature varies as the degree of induration or compactness of the ingredient exposed to its influence.

The lime thus obtained is caustic when applied to the tongue, and effects the speedy destruction of moist vegetable and animal bodies. It has a tendency to combine with water, the application of which produces swelling and considerable heat; and lastly, it falls into a fine white and palpable powder.

When applied in this state to vegetable or animal substances, either in the way of compost or upon the soil, so far from affording nutriment to such vegetable or animal substances as may be present, it speedily effects a decomposition of these bodies by its powerful tendency to unite with some one or other of their various constituent parts: the living principle is thus expelled, and the elementary matters of which those bodies consisted, become readily yielded, and form the basis of valuable sustenance to the future plant.

But for the reason I have already glanced at—the great tendency which lime chemically possesses of uniting with other bodies—it happens, that when it is exposed for a short time to the atmosphere, this earth speedily recovers a principle which re-converts it into the very substance from which it was obtained by the operation of the lime kiln, aided by the necessary degree of moisture. The substance so obtained is the carbonic acid or fixed air of the elder chemists. Of what use then, it will be asked, was the operation of burning the lime, as it is termed? This question can be now very satisfactorily resolved. Several considerations point out the necessity of adopting this apparently circuitous process.

In all situations where fuel is abundant, and which at the same time abound with calcareous fossils, such a process can be more conveniently adopted. It would be impossible to obtain an impalpable powder from lime-stone, generally speaking, but the utmost nicety and elaboration of grinding mechanically, equal to what we obtain by the two-fold process of first exposing limestone to heat, and of afterwards slackening such lime by the effusion of water, or its gradual exposure to the atmosphere; which both furnishes the necessary moisture, and at the same time the active and important acid which is contained or distributed throughout the atmosphere, as far as chemical researches have been advanced. But this carbonic acid is more especially found near to the surface of the earth.

Lime, after it has been thus exposed, and when it has again recovered from the atmosphere, the carbonic acid lost in the furnace, does not re-assume its cohesion, or the mechanical texture or induration which it previously in the state of fossil possessed, but continues, after this new mechanical re-combination, perfectly impalpable as before, though it no longer retains its solubility, and the caustic quality which in a pure state, as obtained from the furnace, it possessed; nor has it the power in this form, any more than sand or clay, or yielding nutriment to vegetable matter possessed of life. It is in this state termed the carbonate of lime; and known also by the term *effete* lime.

In what manner the carbonate of lime becomes the vehicle through the medium of which plants may obtain one material portion of their nutriment in a calcareous soil, whether natural or artificial, will be better understood when we have more minutely considered the carbonaceous principle, or carbon, as it is by modern chemists denominated.

When vegetables, of whatever description, are exposed to a suitable degree of heat in close vessels, and so as that the external air may be entirely excluded, they lose a considerable portion of their weight, in consequence of the volatility which is employed. These either pass off in a state of condensable vapours, or of incondensable æriform fluid. The coally residuum is in shape and appearance very nearly similar to the original vegetable body from which it was obtained. It is, however, in consequence of the volatile ingredients which have been separated from it by distillation, or the act of charring, considerably reduced in weight, and of a texture very spongy or porous.

It is perfectly combustible, almost without residuum; and in this state is, from its coally appearance and qualities, called carbon. Now, as this substance is found so abundantly in every part of all plants and vegetable bodies, we may conclude that such substances as are employed for manures, and which contain the most of this principle, are capable of yielding it in the greatest abundance, and are consequently best adapted to the fit nourishment of vegetables.

But carbon is not soluble in water, and it is essential that all the substances which are to become nutriment to the future plant, should be presented, if through the medium of their radical or root fibres, in a state of solubility in water or aqueous fluids.

Let us now inquire by what happy faculties the carbonate of lime can become combined with other bodies, and thus acquire the means of ready solution in water, and whence the living powers of the plant can again dissolve such union, and assimilate with itself that portion of the compound, viz., the carbon, which is essential to its nourishment, and at the same time reject whatever may be extraneous or foreign, by such emunctory or exhalent vessels as all vegetable, as well as animal bodies, in a living and healthy state, are possessed of.

It appears, by numerous and accurate experiments, that every 20 grains of carbon will, by uniting with 80 grains of the basis of pure air, (which always takes place during the act of combustion,) form 100 grains of carbonic acid—a gaseous or æriform fluid, as already mentioned, but having very different properties from the air of the atmosphere, its mechanical properties excepted. This gas has all the properties of acids; that is, can act upon the earths, alkalies, &c., and form saline compounds: and though not abundantly soluble in water, like some of the more considerable acid vapours, still it gives a pleasant aciduous zest to all the mineral springs, or factitious ærated waters, with which it may be combined. Its basis is carbon, as has been stated, absolutely insoluble in water; but when that basis is chemically converted into the acid state, it then becomes readily soluble in that fluid.

Water, therefore, holding this gas in solution, or substances in which this gas enters into combination, and which becomes in consequence capable of being dissolved in water, are eminently fitted for yielding it to vegetable bodies, through which such æqueous fluid circulates; and it is further manifest, that the more of this æqueous fluid enters the system of plants, the greater is the quantity of carbonaceous food presented to them through such medium.—*Hornby on Lime, its Uses and Abuses.*

TURNIP-FLY.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—As a most important season in the multifarious avocations of the farmer is approaching, I am induced to offer you a few remarks for insertion in your very useful and very widely circulating "Express," should you deem them of sufficient importance.

The few words I have to write are on one of the most hackneyed subjects that have engaged the pens of literary agriculturists, and one, too, which *catchpenny empiricism* has thought important enough to select as the means of access to the farmer's pocket. I am no farmer, nor do I understand chemistry, and therefore it may be deemed impertinent in me to offer anything like advice on a subject of which I am confessedly ignorant. I do not presume to offer advice, but merely to give the result of my own experience in a very small way, in the hope that it may be found possible to adopt the plan with facility, largely and usefully. I am encouraged by knowing that ignorant people have sometimes made valuable discoveries by accident; and I am sure I should feel highly gratified and rewarded if anything I could suggest may be the means of averting vexation and disappointment in any degree from the tillers of the soil, among whom I reckon some of my best friends, and thus help to render their noble occupation somewhat less uncertain. In my constant intercourse with farmers, frequently have I heard their lamentations on the destructive ravages of the turnip-fly. A small patch of turnip-seed was sown in my garden some weeks since, and thought no more about for a considerable time, till one day chancing to pass by it, I observed my seed was growing, and on closer inspection discovered it was swarming with fly, and already half destroyed. I lost no time in applying what I hoped would be a remedy for the mischief; this consisted of some stale liquid from a lime-pit, scattered over the young turnip plants with a watering-pot. On revisiting the patch next day, it was most gratifying to observe that the enemy was gone, and scarcely a fly was to be seen, except one solitary little wretch that was perched on a plant just unfolding; but not a fly could be seen on any plant that had received a sprinkling from the rich contents of the watering-pot.

The next apprehension was, that possibly the sprinkling might have injured the plants; a few days, however, removed that apprehension, for rain came and washed the sprinkling (of lime and animal matter in combination) off the plants, and down to the roots, and they have since grown away in rank luxuriance, have been thinned once, and require the same operation again. Thus, by this sprinkling, the plants received complete protection from the fly *first*, and then, when the rain fell, were nourished by a highly stimulating manure. It will, however, be said, but of what avail is this information? Farmers have not access to the lime-pits of the tanner, and if they had, the quantity to be procured would be so small as not to be of any material benefit; which is very true, and therefore the writer would recommend every farmer to have his own lime-pit, which he may have in his own farm-yard. If so situated as to take run of the yard, all the better, or where water may be obtained; a bricked pit or tank, into which should be thrown a few quarters of lime, with a sufficiency of water; into which may be thrown from time to time, as it can be procured, all manner of refuse animal matter, cut in pieces—a dead sheep, horse, &c., and the entrails of what may be slaughtered. Sometimes, on the coast, a load of worthless fish may be obtained. Farmers are little aware what an amount of rich liquid manure may be obtained at a very trifling cost; and yet they pay large sums annually for *dry bones*, and buy Guano that has to be freighted from the Pacific, and pay profits two or three deep into the bargain, and large casks of compost made in London, with names attached to them almost too hard to pronounce. Being at a corn market somewhere in the county some time since, the writer observed on one corn-dealer's stand some bottles of something, carefully corked; and on enquiring what stuff it was in one of the bottles, was informed that it was a sample of manure. This brought to my mind the prediction of the chemist, who said the time would come when a man might carry manure for an acre of land in his waistcoat pocket; and the rude, unbelieving, and sneering reply, that when that time came the crop might also be stuffed into the coat pocket. I would not, however, be supposed to speak disparagingly of the various artificial manures that are brought from far. I am not competent to give an opinion, but wish they may be appreciated according to the respective merits of each. I have no private interests to serve, but I take a great interest in anything that will promote the general prosperity of my native land.

In conclusion, I repeat that I am not a farmer, but I know, from effects produced at various times on a small scale in my garden, that animal matter in solution, with lime, is an active and powerful manure; and what induced me to think it may be a preventive to the fly was, that I had observed, however stale and fetid, *animal life* cannot exist in it.

I am, Sir, yours respectfully,

Romsey, June 8. A Tanner.

ROYAL AGRICULTURAL IMPROVEMENT SOCIETY OF IRELAND.

LIST OF THE PRIZES AWARDED AT THE SHOW HELD AT CORK ON THURSDAY, JULY 21, 1842.

CATTLE.

CLASS I.—DURHAM, OR SHORT-HORNED CATTLE.

For the best 4 year old Bull—The first prize, value 25 sovs., was awarded to Wm. D. Fergusson, of Rosebank, Rathfarnham, Dublin.

For the second best—15 sovs., to Richard Almond, of Standish, Wigan, England.

Wm. B. Wade's (of Clonatrony,) Bull was commended by the judges. The medal was awarded to W. D. Fergusson as the breeder of the best bull in this class.

For the best yearling Bull in this class, 15 sovs., was awarded to Mr. Almond, as above.

James Splane, of Garrane's Bull was commended.

For the best Bull, in the above two classes, the medal was awarded to W. D. Fergusson, as above.

For the best Cow, in milk, the first prize, value 10 sovs. was awarded to Mr. Almond, as above.

Mr. W. Q. Mongomery, of Killa's Cow was commended.

For the Heifer in Calf, the first prize, value 10 sovs. was awarded to John Forrest, of Stretton, Warrington, England.

For the best Heifer in the above two classes, John Forrest, as above.

In Herefords, or long-horned Cattle, there was not any competition.

CLASS IV—AYRSHIRES.

For the best 4 year old Bull, the first prize, value 20 sovs. was awarded to James M'Kinley, of Glasgow.

For the second best, 10 sovs. to Lord Shannon ; and Mr. James Fergusson, of Castlefarm's Bull was commended.

For the breeder of the best Bull in this class, the medal was awarded to J. M'Kinley, as above.

For the best yearling Bull, the first prize, value 10 sovs. was awarded to N. W. Roche, of Carricabrick, Fermoy.

For the best Bull, in the above 2 classes, the medal was awarded to N. W. Roche, as above.

For the best Cow in Milk, the first prize, value 10 sovs. was awarded to James M'Kinley, as above.

For the best Heifer in Calf, the first prize, value 5 sovs. was awarded to. J. Tuthill, of Riversview, Nenagh.

For the best yearling Heifer, the first prize, value 5 sovs. was awarded to J. Hannin, of Kilmore, Cloyne.

For the best Heifer, of the above 2 classes, the medal was awarded to the same.

CLASS V.—DEVONS.

The Bulls in this class were not considered as possessing sufficient merit to entitle them to a prize.

For the best Cow in Milk, the prize value 10 sovs. was awarded to Lord Lismore.

For the best three year old Heifer, first prize, value 5 sovs. were awarded to Lord Carbery ; as also, the first prize, value 5 sovs., for the best yearling Heifer in this class, and the medal was awarded to his lordship for the best Heifer in the above two classes.

CLASS VI.—DUTCH CATTLE.

For the best Bull, four years old, the 1st prize, value 15 sovs. was awarded to R. Briscoe, of Glandaline, Fermoy.

For the second best, the prize, value 10 sovs. was awarded to T. Barry, Rockville, Midleton.

To the breeder of the best Bull in this class, the medal was awarded to R. Briscoe, as above.

For the best yearling Bull, the first prize, value 5 sovs. was awarded to Henry Barry, Barry's Lodge, Midleton.

For the best Bull of the above two classes, the medal was awarded to the same.

For the best Cow, the first prize, value 5 sovs., was awarded to the same.

For the best three years old Heifer, the first prize, value 5 sovs. was awarded to Lord Doneraile.

For the best yearling Heifer, the first prize, value 5 sovs. was awarded to T. Barry, as above.

For the best Heifer, in the above two classes, the medal was awarded to Lord Doneraile.

CLASS VII—WEST HIGHLAND CATTLE.

For the best Bull, the first prize, value 10 sovs., was awarded to David C. Latouch, of Marley, near Dublin.

For the second best ditto, 5 sovs., to the same.

For the best Cow, the first prize, value 5 sovs., to the same.

For the best Heifer, first prize, value 5 sovs. to the same.

For the best yearling Heifer, the first prize, 3 sovs., to the same.

CLASS VIII—KERRY'S.

The Bulls in this class did not possess sufficient merit to entitle them to a prize.

For the best Cow, the first prize, value 5 sovs., was awarded to Richard Hartland, 9, Patrick-street, Cork.

For the second best, a prize value 3 sovs., was awarded to Daniel Lombard, of Ballinhassig.

CLASS IX.

For the best of all the prize Bulls, the Golden Medal was awarded to D. Fergusson, of Rosebank, Rathfarnham, Dublin.

For the best of all the prize Cows or Heifers in the above classes, the Gold Medal was awarded to John Forrest, of Warrington, England.

The County Cork Challenge Cup, for the best Bull, was warded to J. Dillon Croker, of Mallow.

The Halverston Agricultural Challenge Cup, value 100 sovs., given by Peter Purcel, Esq., for the best of all the prize beasts, was awarded to John Forrest, of Stretton, Warrington, England.

CLASS X.—SHEEP.

For the best Leicester Ram, the first prize, valued 10 sovs., was awarded to R. Briscoe, jun., Glendaline.

Second best do., 5 sovs. to the same.

For the best yearling Ram, 5 sovs., to N. F. Foley, of Ballygally, Lismore.

For the best Ram in the above class, the medal was awarded to R. Briscoe, as above.

For the best pen of 5 yearling Ewes, the first prize 10 sovs., to J. J. Watkins, Woodfield, Worcester.

For the second best do., 5 sovs., to R. Briscoe, as above.

For the best Southdown Ram, a second, prize, value 5 sovs. was awarded to Lord Shannon.

CLASS XII.—SWINE.

For the best Boar, 5 sovs., to R. G. Campion, Bushy Park, Rathcormack.

For the second best ditto, 3 sovs., to Wm. Sherard, of Ballybogget, Cabinteely, Dublin.

For the best breeding Sow, 5 sovs., to the same.

For the second best ditto, 3 sovs., to John Galway, of Myshall, Coachford, county Cork.

HORSES.

For the best Stallion for agricultural purposes, 20 sovs., to Wm. Sullivan, of Kilcromper, Fermoy.

For the second best, 10 sovs., to Benjamin Willen, of Mitchelstown.

For the best Cart Mare, to Lord Shannon, 5 sovs.

For the best two year old Colt or Filly, Benjamin Willen, as above, 5 sovs.

For the best one year old ditto, William Coppinger, Barryscourt, Middleton, 5 sovs.

For the best thoroughbred Stallion, to James O'Neill, Cork, the medal.

For the best brood Mare, to Thomas Barry, Rockville, Midleton, the medal.

For the best Spanish or foreign Ass, Thomas G. French, Marino, 10 sovs.

FAT STOCK IN CLASSES.

For the best Devon Ox, to Lord Carbery, the medal.

For the best Dutch Heifers calved after the 1st of January, 1840, to Thomas Barry, Rockville, the medal.

For the best fat Ox of any age or breed, to Lord Glengall, the medal.

For the best Cow of any age or breed, to Thomas Murdock Greene, Ahada, the medal.

EXTRA STOCK.

For the best Durham Bull, to N. C. Martin, Butlerstown, Glanmire, 5 sovs.

COWS.

For a pair of half-bred Suffolk and Ayrshire Cows, to Russell Fitton, of Gawsworth, Cork, 2 sovs.

HEIFERS.

For the best short-horned Heifer, 3 years old, H. B. Mitchel, Mitchelsfort, Cork, 3 sovs.

For the best Durham Heifer under two years, Edward J. Collins, of Turine Lodge, Glanmire, 2 sovs.

For the best Ayrshire Heifer, the property of Robert Tighe, Esq., Coolmore, Carrigaline, 2 sovs.

HORSES.

To Henry Mitchel, Mitchelsfort, for a 9 years old bay poney.—2 sovs.

SHEEP.

A premium of 5*l.* was awarded, for 5 fat and 3 shear long-wool wethers, the property of the Rev. Somers Payne.

The following were commended by the Judges:—Black cart stallion, the property of S. K. Furley, Sarsfield-court, Glanmire, 5 two-shear long-woolled ewes, property of Robert Briscoe.

REPORT ON AGRICULTURAL IMPLEMENTS.

The Judges appointed to award the Prizes for the Implements exhibited at the first Show Meeting of the Royal Agricultural Improvement Society, held at Cork, on the 21st day of July, 1842, have the honor of reporting to the Council, that having carefully inspected all the implements exhibited in the show yard, they are of opinion that the whole of them, with few exceptions, are entitled to commendation; and, taking all circumstances into consideration, especially that it is the first exhibition of the kind, under the auspices of the society, that the whole is highly creditable to the exhibitors. At the same time, finding that no one implement possessed any very new feature or superiority of design or construction—they think it most advisable to recommend all the exhibitors as deserving of some mark of approbation—varying the prizes according to the extent and general importance of the implements in each lot.

Lot 68.—Richard Perrott, Hanover-street, Cork.—All the implements in this lot were of good workmanship. The steam engine, in particular, simple and effective, and well adapted to agricultural purposes—the ploughs of good form and well put together.—6 sovs.

Lot 62.—Richie and Brown, Fermoy.—The threshing machines in this lot were well designed, and of excellent workmanship, with a useful application of a break to regulate the motion and prevent accidents. The other implements well constructed, 5 sovs.

Lot 133.—John Murphy, North Frederick-street, Dublin.—This lot contained a Suffolk Corn Drill, of some merit, manufactured in Ireland, an Oat Crusher with cylinders and hopper, a zinc churn, on the plan of Baker's patent churn, with an outer case to contain water at any temperature, 5 sovs.

Lot 145.—Courtenay and Stephens, Blackhall-street, Dublin.—A trench over plough, a drop drill for manure, and Drummond's reaping scythes, 3 sovs.

Lot 134.—Robert Law, Shetleston, Glasgow.—A subsoil plough, with moveable turn-furrow. A neat Scotch cart, and some well constructed ploughs, 3 sovs.

Lot 134.—To ditto.—For a simple machine to sow turnip seed, of the price of 15s., which seems well suited for the small farmers of this country, 1 sov.

Lot 6.—Michael Hayden, Tallow.—For two swing ploughs of good construction, and a scuffler, 2 sovs.

Lot 143.—James Sheridan, Bridgefoot-street, Dublin.—For several well constructed swing ploughs, 2 sovs.

Lot 27.—John Duly, West-street, Tallow.—For a neat swing plough, with a furrow gauge, 1 sov.

Lot 45.—Timothy Hurley, Shannon Park.—For a well constructed swing plough, 1 sov.

Lot 135.—Saunder and Williams, Bedford.—For a useful turnip cutter, 1 sov.

Lot 146.—Alexander Francis Campbell, Norwich.—For an ingenious farming plough with a wheel in the body of it, 1 sov.

Lot 60.—Leonard Keating, Cashel.—For a simple ribbing maching, 1 sov.

Lot 126.—Benjamin Deeble, Cork.—For the exhibition of a small Suffolk drill, which has been used in this country for some time, 1 sov.

Lot 43.—Robert Briscoe, jun., Fermoy.—For a neat covered sheep cart on springs, 1 sov.

Lot 7.—Rev. Mr. Townsend, Aghada.—For a small liquid manure cart, the wheels of which run on shod axle trees, 1 sov.

Lot 106.—Dr. Barter.—For a simple mode of threshing furze, 1 sov. This implement is besides entitled to 5 sovs. offered by the County of Cork Agricultural Association, as the simplest and best furze bruizer. It is of a simple form although of rude construction, and with a few improvements may be made generally useful and effective.

BUTTER.

Leonard Keating, of Garonlea, Cashel, got the first prize for butter saved for the London market.

BLACK THE WORST COLOUR FOR PAINTING WOOD-WORK IN THE OPEN AIR.—There is nothing that will prove this evil more than by observing the black streaks of a ship after being in a tropical climate for any length of time. It will be found that the wood round the fastenings is in a state of decay, while the white work is as sound as ever; the planks that are painted black will be found split in all directions, while the frequent necessity of caulking a ship in that situation likewise adds to the common destruction; and I am fully persuaded that a piece of wood painted white will be preserved from perishing as long again, if exposed to the weather, as a similar piece painted black, especially in a tropical climate. I have heard many men of considerable experience say that black is good for nothing on wood, as it possesses no body to exclude the weather. This is, indeed, partly the case; but a far greater evil than this attends the use of black paint, which ought entirely to exclude its use on any work out of doors, viz.—its property of absorbing heat. A black unpolished surface is the greatest absorber and radiator of heat known; while a white surface, on the other hand, is a bad absorber and radiator of the same; consequently, black paint is more pernicious to the wood then white. Wood having a black surface will imbibe considerably more heat in the same temperature of climate than if that surface was white; from which circumstance we may easily conclude that the pores of wood of any nature will have a tendency to expand, and rend it in all directions, when exposed under such circumstances; the water of course being admitted, causes a gradual and progressive decay, which must be imperceptibly increasing from every change of weather. The remedy to so great an evil is particularly simple, viz.—by using white instead of black paint, which not only forms a better surface, but is a preventive to the action of heat, and is more impervious to the moisture. The saving of expence would also be immense, and, and I am convinced that men of practical experience will bear me out in my assertion.—*Trasn. Society of Arts.*

EAST RIDING YORKSHIRE AGRICULTURAL SOCIETY.

On Wednesday, the 27th of July, the annual show of stock, agricultural implements, &c., before the East Riding Agricultural Association, took place at Beverley, under circumstances of a highly auspicious character. The weather was all that the most sanguine friends of the association could have wished. On the evening previous to the show, the town of Beverley and its immediate neighbourhood gave unequivocal indications of the approaching bustle and animation of the cattle show—and many gentlemen interested in agriculture, and resident at great distances, and who consequently could not have reached the scene of action if they had left home on the morning of the 27th, took up their rendezvous at the different inns on that evening. On Tuesday evening, likewise, the servants of the association were busily occupied in making preparations for the coming exhibition of "fat beasts," and agricultural implements, the work of "cunning" handicraftsmen. The fields on which the exhibition took place are situated to the west of the town, close upon Westwood, the beautiful and valuable domain of the freemen of Beverley, and adjoining the high road from York to Hull. The fields in question, which belong to Mr. James Skelton, of the Rose and Crown Inn, lie somewhat in the form of a gently inclined plane, and are admirably adapted for such an exhibition as a cattle show. These fields are separated from each other by a hedge, one of them being devoted entirely for the exhibition of the stock, and the other principally for the show of the implements, but for some bulls and mares in foal as well.

THE SHOW-YARD.

Wednesday was ushered in by one of the loveliest mornings we have experienced for a long time. Numberless arrivals from all parts of the surrounding country took place early in the morning, and the usual stillness of the rural town was broken by the rattling of carriages, the prancing of horses, the voices of men, and now and then by the lowing of oxen and the bleating of the woolly sheep. All kinds of vehicles were in requisition, and the yards of the principal inns presented a bustling, if not in many instances a confused, appearance. The coaches from Hull were crowded to excess, some of the passengers being forced, from want of room elsewhere, to rest their limbs upon the places usually assigned for luggage. Great numbers of horsemen and pedestrians also reached the town at an early hour in the morning. Most of the judges, we understand, as well as some leading agriculturists, reached Beverley on the night previous to the show. And we are glad to have this opportunity of remarking *en passant*, that we heard some skilful farmers speak highly of the crops of hay on some parts of the road between Hull and Beverley. This we think worth mentioning amid the general complaints we hear uttered all over of a light and thin crop of this valuable food. Long before nine o'clock on the morning of Wednesday great numbers had assembled in the show-yard, which, as usual on such occasions, was the grand point of attraction. Immediately after nine o'clock, the stock for exhibition began to arrive, and continued pouring in until the period which was the limit, by the regulations of the association, for the reception of stock upon the ground. The grounds soon became animated by the presence of the members and friends of the association, who arrived in great numbers between ten and eleven. The members were admitted free, non-members paid a shilling each for admission. Throughout the day no fewer than between two and three thousand people visited the grounds, so that a handsome sum must thereby have been realised by the society. On the first field an extensive platform was erected for the use of the members and the public, from which an excellent view could be had of the apartment in which the judges examined the horses, &c. The exhibition of the stock was, we regret to say, in some particulars not so good as at the last show. We need not here enter into any detail as to the comparative merits and numbers of the animals shown, as we annex a complete list of the competitors in each class, as well as the names of those who were fortunate enough to carry off the prizes.

The large Assembly Room in Norwood was fitted up as a Dining Hall. Five tables were laid in the room running lengthways from the folding doors to the orchestra or ladies' gallery. At the top of the room there was a raised cross table, at which sat the chairman and some of the principal gentlemen who attended the meeting. The ladies' gallery was very thinly attended, only a few being present. This large room, it will be remembered, was built a few years ago, and cost 2700*l*., raised by a num-of gentlemen and others in shares of 10*l*. each. On this occasion four silver cups, value 10*l*. each, were awarded. Some of these were placed on a recess behind the chairman in the course of the evening, and were much admired. Four silver medals were also on this occasion placed at the disposal of the judges for extra stock.

The dinner, which was excellent, was provided by Mr. Wm. Burrell, of the White Horse Inn. About 300 sat down at about half-past three o'clock.

During the entire day of the exhibition, Mr. James Boyce, the secretary of the association, animated by a hearty desire for the prosperity of agriculture, contributed his valuable services on the show-ground, and was exceedingly obliging to all who came in contact with him.

The chair was taken by Jas. Walker, Esq., of Sand Hutton, and among the gentlemen present we observed the following :—John Collins, Esq., of Danthorpe ; E. W. Smith, Esq., of Routh ; James Hall, Esq., of Scarboro' ; Charles Whittaker, Esq., of Melton Hill ; Wm. Stickney, Esq., of Ridgmont, near Hull ; Richard Wiley, Esq., of Beverley ; Thomas Watson, Esq., of Waudby ; David Burton, Esq., of Cherry Burton, near Beverley ; Geo. Liddell, Esq., of Hull ; P. Tigar, Esq., the Mayor of Beverley ; Rev. John Blanchard, of Middleton ; Robert Denison, Esq., Clifford Pease, Esq., Joseph Robinson Pease, Esq., of Hesslewood ; J. G. Cankrien, Esq., of Anlaby House ; George Coulson, Esq., of Cottingham Castle ; Rev. James Blow, of Goodmanham ; E. Hutton, Esq., D. Burton, jun., Esq., Joseph Peas, Esq., of Hesslewood ; the Rev. — Whateley, Rise ; Jonathan Harrison, Esq., P. Saltmarshe, Esq., of Saltmarshe ; A. Empson, Esq., J. Hudson, Esq., of Beverley ; H. Hill, Esq., of Sledmere Field ; James Sprott, Esq., James Hall, Esq., of Scarboro' ; E. R. Godbold, Esq. ; Wm. Raines, Esq.

THE EXHIBITION OF IMPLEMENTS

Attracted great crowds throughout the day on account of the great numbers exhibited. There were not, however, many novelties in this part of the show ground. The principal machines which could be called new were, an ingenious steamer for steaming potatoes or any other kind of vegetable (for which a prize was awarded to the exhibitor, Mr. Dale, of Beverley and Bridlington), and a patent cast-iron plough, exhibited, we believe, by Messrs. R. and F. Grassby, March. Mr. Geo. Wilson, of Coldstream, Berwickshire, shewed an improved sheep-dipping apparatus. This apparatus had never before been exhibited in this county, and thousands of sheep may be dipped in it without a single drop of the poisonous liquid being wasted. The most extensive exhibition of implements on this occasion was as usual by Mr. William Crosskill, manufacturer of agricultural machinery, Beverley Iron Works. Amongst the numerous implements exhibited by this spirited and enterprising gentleman, may be particularised the following :—Four-horse portable peg drum thrashing machine, with one rake and blower ; four-horse fixture peg drum machine, with two rakes and blower ; six-horse ditto, peg drum machine, with two rakes and blower, to work with a steam engine ; six-horse thrashing machine, on a new and simple principle ; four-horse ditto ; three-horse ditto ; two-horse ditto. Smooth cast-iron rollers, each in two parts, as follows :—36 inches diameter, 6 feet long, 30 by 8 ditto, 30 by 6 ditto, 24 by 8 ditto, 24 by 6 ditto, 20 by 8 ditto, 20 by 6 ditto, six coulter drills for wheat, barley, oats, and beans, and made to sow three rows of turnips ; presser drills, for three rows ditto, without drill ; presser drill, for two rows ditto, without drill ; turnip drill, for one row, with apparatus to sow ashes and bones ; gardener's turnip cutters, fitted with wheels to move about upon ; common turnip cutters for sheep and cattle ; ditto for cattle only ; crank turnip cutters, for sheep only ; circular ditto, for ditto ; hand turnip-chopper ; straw-cutters, two-horse, can be applied to thrashing machines, warranted to cut 200 bushels per hour ; a two-horse driving part, for a straw cutter ; hand straw cutters ; ditto oat mill, bean mill, malt mills, linseed and rapecake mills, four-horse power, will grind 200 bushels per hour ; linseed and rapecake crushers, ditto, small size ; ditto, ditto, hay-making machines ; Grant's patent hay and corn rake ; iron drill harrow ; scufflers ; iron ditto ; barley faultering machine ; the Earl of Ducie's cultivator, which was awarded prizes at Liverpool and Hull, 1841 ; Biddell's scarifier ; Wilkee's drag harrow ; Finlayson's ditto ; potatoe steamers, upon a new and simple plan, invented by Mr. W. C. ; potatoe washer ; ditto (another plan) ; grass-mowing machines, for lawns and grass plots ; corn weighing machines ; machines for weighing live sheep or wool packs ; coal weighing machines ; fly (commonly called Jack) trap, to take them from the turnips ; hand-hoes ; Crosskill's liquid manure cart, holding 200 gallons, with pump attached, fitted with a portable pipe ; ditto, without pump and patent pipe ; Crosskill's corn-dressing machines, with riddles and screens for wheat, barley, oats, and beans, will dress 20 quarters per hour ; ditto, 30 ditto—this machine was awarded the silver medal of the Highland Society, held at Berwick, September 30, 1841 ; Crosskill's patent clod-crusher roller.

Mr. John Dale, ironmonger, Beverley and Bridlington, exhibited 1 nine-row corn drill, 1 blowing machine, 1 improved Gardner's patent turnip-cutter for sheep, 1 ditto for beasts, 1 hand turnip-cutter on wheels with circular mouth-piece for sheep, 1 cake mill, 1 Grant's patent wick rakes, 1 improved Finlayson's harrow with teeth or socks, 1 wheel plough, one ditto with skim coulter, 1 L. H. Plough, 6 B. M. ditto, 1 steam pan for steaming potatoes or any other kind of vegetables, 1 steelyard beam and iron frame for weighing sacks of corn.

Mr. John Dry, of Beverley, patent corn dressing machine maker, exhibited an improved thrashing machine by horse-power, &c.

Mr. Robert Towse, North Burton, exhibited 2 horse cultivators, 1 turnip scruffler and skimmer, and a Dutch plough.

Messrs. Barnett and Ashton, of the Britannia Foundry, opposite the New Baths, Humber Bank, Hull, exhibited 7 patent ploughs of different construction, namely, an iron wheel plough, an iron swing plough, 3 wheel ploughs, 2 swing ploughs, and 6 sets of patent zigzag iron harrows.

The show of implements gave great satisfaction, and was highly honourable to the East Riding Agricultural Association.

JUDGES' NAMES.

For Horses and Pigs.—T. Brooks, Esq., Croxby ; S. Robson, Esq., Wyham ; E. Thompson, Esq., Armin.

For Cattle and Sheep.—J. Garbutt, Esq., Mandall ; W. Bartholomew, Esq., Goltho ; F. Nicholson, Esq., Appleby.

For Implements.—Mr. P. Gofton, Dowthorpe Hall ; Mr. Harrison, Leven Hall, Garth ; Mr. W. Chapman, Lund Wold ; Mr. J. Botterill, Easthorpe ; Mr. W. Moore, Burn Butts.

The cloth having been drawn,

The Chairman proposed the health of the Queen. (*Loud applause*).

The Chairman said the next toast which he had the honour to propose to them was the Prince of Wales. It was many years since the health of a Prince of Wales had been drunk in England—(*hear*)—and now, as they had an heir apparent to the throne of these realms, he thought they could not do better than embrace the opportunity which then presented itself of evincing their loyalty, and by drinking his health. (*Applause*). He begged to propose the "Health of his Royal Highness the Prince of Wales." The toast was most heartily responded to by the company.

The Chairman.—If any man during the short time he has resided in this country had won for himself golden opinions, it was the distinguished individual whose health he was about to propose to them (*hear*), one who shared with her Majesty not only in all the enjoyments and all the splendours of royalty, but the participator, also, of those dangers which providence in his mercy to them—to those present—and to the nation at large—(*hear*)—had averted from their royal persons. (*Applause*). He gave them the "Health of his Royal Highness Prince Albert." (*Applause*).

The Chairman.—He had not tried to use any inducements to persuade them to drink the toasts which he had already offered to their notice—and he felt confident that the one which he was now about to propose to them would meet the same cordial approbation which had been shown to the others. (*Hear*). Her Majesty the Queen Dowager had, during the time she has resided in this country, shown so much beneficence—so much liberality and kindness—and had done so much for the benefit of the people of this country—that he was sure they would all rejoice at having the opportunity of drinking her good health. *(Loud applause)*. He proposed "Queen Adelaide and the rest of the Royal Family." (*Rapturous Applause*).

The CHAIRMAN.—The next toast upon the list which he had the honour to propose to them was the Archbishop of York and the Clergy of the Diocese. (*Applause)*. He begged to propose "The Archbishop of York and the Clergy of the Diocise." (*Much applause*).

The Rev. JOHN BLANCHARD, of Middleton, rose to return thanks, but in consequence of the loud and continued cheering which followed his rising he was for some time inaudible. He said he much regretted that his friend, the Venerable Archdeacon Wilberforce, was not present there that day, who would have returned thanks for the honour which they had done the church in a much abler manner than it was in his power to do. He might, however, observe that the clergy are most deeply interested in the promotion of agriculture. It was true that the clergy were precluded from farming much land, and, therefore, they could not enjoy those incomes which resulted from agriculture. He was sure, however, that they were exceedingly interested in the prosperity of agriculture, and he hoped that the friends of this country would be so united together, that they would join hand in hand in promoting the general welfare, and he was sure they would not wish to see the clergy depressed in circumstances. *(Applause*). He was convinced from their acquaintance with them, and their attachment to the church, that they would give the clergy credit for doing as much good as lay in their power. He begged leave to thank them for the honour they had done to the Archbishop and the Clergy of the Diocese.

The CHAIRMAN said, as there was much business relative to the East Riding Agricultural Association before them, he should be unwilling to do more than name the next toast—the Army and Navy of England. (*Applause)*. But he could not allow it to pass without calling their attention to the very brilliant achievements so recently displayed by our army in India, where, in the face of an enemy possessing every advantage over our soldiers from their desultory species of welfare, so suitable for keeping possession of the passes of the country, they have shown that nothing is invincible to our British troops, composed of brave and well-disciplined soldiers, and commanded by skilful and gallant British officers. *(Loud applause*). Through these means great successes had been achieved in India. And these were successes of the very greatest importance, in a national point of view, as tending to strengthen British power, and to restore the influence of British councils in India. *(Loud applause)*. Therefore it was that they who were living at home in peace and in the enjoyment of every comfort should drink the healths of those men who had gone forth in defence of this country, ready to sacrifice their comforts, their health, and, if requisite, their lives, for the benefit of England. (*Applause*). He gave "The Army and Navy of England." The toast was drank with all the honours.

Capt. GODBOLD of her Majesty's 87th regiment returned thanks on behalf of the army.

The CHAIRMAN.—He now came to the more immediate business of the association connected with that meeting. He held in his hand letters from Lord Hotham, Mr. Broadley, and Mr. Bethell, each of whom regretted his absence from that meeting. He would read to them the letter which had been received from Lord Hotham. It was dated London, July 22, 1842, and was to the following effect:—"Gentlemen, it is with feelings of the deepest regret and mortification that I am compelled to announce to you my inability to attend at Beverley on Wednesday next, and perform in person the duties of the situation which I have the honour to hold of President of the Agricultural Association of the East Riding. If I felt concerned at having a similar announcement to make last year, you may imagine how doubly painful it is to me to have on this occasion to repeat it. But I am still suffering from the severe illness by which I was attacked thirteen months ago, and which has hitherto prevented me giving attention to public business of any kind, and which indeed confines me almost wholly to my room. May I beg that you cause this apology to be made for my absence, and believe me, gentlemen, your very obedient humble servant.—HOTHAM." (The letter was addressed, we understand, to the gentlemen of the committee). The letter which had been received from Mr. Broadley was dated 25th July, from No. 15, Charles-street, St. James's-street, and was as follows:—"My dear Sir: I have delayed almost until the last moment writing to you, hoping I would have been able to make such arrangements with respect to my public and private duties and engagements, as would have allowed me to be present at the annual meeting of our East Riding Agricultural Association on Wednesday next. But finding this to be impracticable I am most unwillingly compelled to request you will be kind enough to express to the association my great regret and disappointment at being unable to meet them on that occasion—an occasion when I was the more particularly anxious to be present in consequence of the recent changes which have been made in the laws affecting agricultural produce.—I have the honour to be, Sir, very faithfully yours HENRY BROADLEY." This was addressed to the chairman of the meeting. The letter from Mr. Bethell was dated "Rise, near Hull, July 16," and was as follows:—"Sir: I thank you for your notice of the Agricultural meeting at Beverley. I am sorry that it will not be in my power to attend it, as I leave home this morning, and shall not return till the York assizes. Be so kind as to express my regret to Mr. Walker (who will, I suppose, preside in the absence of Lord Hotham), at my not being able to pay my respects to him on the occasion.—I am, sir, your obedient humble servant, R. BETHELL." This letter was addressed to J. Boyes, Esq., the secretary of the association. He (the Chairman) regretted the absence of Lord Hotham and Mr. Broadley, and he was sorry that they had not the pleasure of Mr. Bethell's company that day. He had now to read the

AWARD OF THE PRIZES,

which was as follows:—

LABOURERS AND SERVANTS IN HUSBANDRY.

Labourer in husbandry, who has not occupied more than half an acre of land, who has brought up and placed out to service the greatest number of children, without receiving parochial relief.

First candidate—William Carr, Ellerker, nine children (no relief, seven children in service, and married, two at home, aged 17 and 9) 3*l*.

Second candidate—John Gibson, Cherry Burton, seven children born, six now living, three in service, and three at home; oldest at home 19, and youngest 12 (no relief) 1*l*.

In this class there were three other candidates, namely—John Grantham, Catwick, seven children (no relief). Richard Johnson, Keyingham (certificate not delivered in time). Joel Stather, Holme-on-the-Wolds, nine children (no relief). —This man could not be considered a candidate, in consequence of the deficiency and informality of his certificate.

Servants in husbandry or shepherds (being unmarried persons) will be extended to those who have lived in several places, provided they have lived not less than four years in each service.

First candidate—Joseph Cooper, Heppleworth, shepherd, 39 years, 3*l*.

Second candidate—Richard Smith, Uncleby, shepherd, 35 years 7 months, 1*l*.

In this class there were other two candidates, namely—Matthew Frier, Beilby, 30 years, 34 weeks, and 3 days—(obtained first premium last year). Thomas Whitty, with Mr. Swaddle, Killingraves, 10 years.

Labourer in husbandry who has worked the longest time upon one or more farms, provided he has not worked less than seven years on each farm, without receiving parochial relief, except on account of sickness or accident.

First candidate—Peter Taffinder, Balkholme, 50 years, Duncoates Farm, 3*l*.

Second candidate—William Purdon, Waudby, 47 years 8 months, 1*l*.

In this class there were eleven other candidates, namely—William Carr, with Mr. Arton and successors, Ellerker, 35 years, one farm. John Knowles, with Mr. Richardson, Sutton, 27 years, one farm. William Lamb, Kirby Grindalythe, 44 years on two farms. Christopher Massen, with Mr. L. B. Earnshaw, Hessle, 24 years, one farm. Thomas Story, with Messrs. Shillito, Preston, 40 years, one farm. Thomas Foster, Emswell, 30 years 8 months, one farm. Robert Thurlow, Lockington, 42 years, 7 months. William Wilson, 8 years and 3 months with Thomas Chapman, and 30 years 4 months at Rectory Farm, Lockington, 38 years 4 months. Joel Stather, Holme-on-the-Wolds, 27 years 5 months, one farm. Robert Leeman, 14 years with Mr. Marr, 9 years with Mr. Butler, and 17 years with Mr. Wm. Jackson, Skidby, 40 years, 3 farms. John Gibson, Cherry Burton, 27 years, 2 farms (8 years Mr. Purdon, and 19 years D. Burton, Esq., no relief).

Labourer in husbandry, not occupying more than two acres of land, who has brought up the greatest number of children, and has never received parochial relief, except in sickness, (then the amount received to be stated in his certificate), or who has struggled against the expenses attendant on sickness, without applying to the parish, and who can produce the best character from his employer, all the circumstances to be taken into consideration in adjudging the same. Offered by W. D. T. Duesbery, Esq., Skelton.

First candidate—Robert Leaman Skidby, 12 children born, 2 died young, 5 died between 12 and 23, and 5 in service and married, 18s. paid for nurse when wife ill, £3.

Second candidate—John Slingsby, Etton, 12 children, 8 living, two in service and six married. Relief, 2s. a week for about six months when his wife died, he had then 4 children all young, one child died at 18, another at 9, and 2 when infants, £2.

There were four other candidates, namely, William Carr Ellerker, 9 children born, all now living, 7 in service, 2 at home, 17 and 9, no relief. John Grantham, Catwick, 7 children, no relief,—on account of the excellency of his character, five shillings awarded. Richard Johnson, Keyingham, certificate not in time. Joel Stather, Holme-on-the-Wolds, 9 children, no relief.

SHEPHERDS.

Shepherd, or other person, who has reared the greatest proportionate number of lambs, with the least loss of ewes and lambs, from a flock exceeding 150 ewes.

	No. of Ewes produced lambs.	Ewes died.	Lambs living June 1.
John Harrison, Mr. W. Johnson, Riplingham Grange, £3. ..	123	0	213
D. Goodill, Mr. Sample, Bish, Burton, £1.	137	0	225
G. Holliday, R. Fawsitt, Esq., Hunsley, 5s.	240	0	366
W. Lamplugh, Mr. R. Lamplough, Langtoft, 5s. ..	208	0	317
T. Welburn, Mr. W. Simpson, Walkington, 5s.	170	0	265

There were other seven candidates, namely—Thomas Clark, Mr. John Whipp, Etton. Sawdon Wiles, Mr. J. Burdass, Bessingby. T. Carton, Mrs. Hopper, Rudston. J. Tranmer, Sir T. Sykes, Eddlethorpe. W. Taylor, Mr. T. Harrison, Leven. J. Anderson, Mr. Layborne, Eske. J. Mowthorp, Mr. H. Hill, Sledmere Field.

Shepherd, or other person who has reared the greatest proportionate number of lambs, with the least loss of ewes and lambs, from a flock exceeding 50 ewes, and not exceeding 150 ewes.

A. Middlemas, Mr. S. Judd, Naburn, £3.	150	0	254
Walter Wilson, Mr. William Allen, Thorp Bassett, £1...	107	0	170
J. Witty, Mr. Swift, Holme, 5s.	77	1	138
— Goodill, Mr. Fisher, Leckonfield, 5s.	105	0	175

There were other five competitors, namely,—Robt. Rodger, Mr. J. Atkinson, Hempholme. T. Hopper, Mr. J. Hopper, Wetwang. J. Smith, Mr. T. Hotham, Lund. C. Wright, Mr. G. Scott, Market Weighton. W. Witty, Mr. Bainton, Beverley Parks.

SHORT-HORNED CATTLE.

Class 1.—Bulls of any age, from any part of the kingdom. Mr. Hornby, Flotmanby, one year and four months, £7, for St. Martin (roan) bred by A. L. Maynard, Esq., Marton, near Ripon, calved the 27th of March, 1841, got by Cavendish the 2d from Daisy by Red Robin (2492).

Competitors.—Mr. Hornby, Flotmanby, 1 year 4 months; Thomas Windass, Beverley Parks, 7 months; John Collins, Danthorpe, "Nicholas Nickleby," 5 years 6 months; Joseph Watson, Kirkella Grange, "Vendor," 1 year 2 months; R. W. Straker, Riplingham, "Belshazzar," 4 years; John Leak, Seaton, "Young Gainford," 1 year 4 months; C. Jordison, Lockington, "Gaylad," 1 year 2 months; Robert Danby, Routh, 11 months; Peter Golton, Dowthorpe Hall, "Blaize," 2 years 2 months; Robert Fisher, Leckonfield, "Master Wid," 2 years 6 months.

Class 2.—Bulls not exceeding two years old. Joseph Watson, Kirkella Grange, "Vendor," 1 year 2 months, £3, bred by Mr. Watson, of Waudby.

Competitors.—Mr. Hornby, Flotmanby, 1 year 4 months; Thomas Windas, Beverley Parks, 7 months; John Collins, Danthorpe, "Boy," 8 months; Joseph Watson, Kirkella Grange, "Vendor," 1 year 2 months; John Leak, Seaton, "Young Gainford," 1 year 4 months; C. Jordison, Lockington, "Gaylad," 1 year 2 months; Robert Danby, Routh, 11 months. (A bull shewn in this class obtained the premium in Class 1.)

Class 3.—Cows of any age, in calf or milk, John Collins, Danthorpe, "Venus de Medicis," £4, bred by himself.

Competitors.—Thomas Windas, Beverley Parks; Robert Oxtoby, Wansford; John Collins, Danthorpe, "Madame Grisi"; John Collins, Danthorpe, "Florentine Venus"; John Collins, Danthorpe, "Venus de Medicis"; Rev. D. Ferguson, Walkington; John Dickinson, Birdsall; William Watson, West Ella Grange; James Thompson, Beverley; John Botterill, Easthorpe; John Botterill, Easthorpe.

Class 4.—Heifers above two and under three years old, in calf; John Collins, Danthorpe, "Fortuna," £3, aged 2 years and 11 months, and bred by M . Collins.

Competitors.—Mr. Swaddle, Killingraves; John Collins, Danthorpe, "Fortuna"; William Watson, West Ella Grange.

Class 5.—Heifers under two years old, John Botterill, Easthorpe, £2.

Competitors.—Mr. Swaddle, Killingraves; William Watson, West Ella Grange; William Watson, West Ella, Grange; William Watson, West Ella Grange; Mr. Holland, Eppleworth; John Botterill, Easthorpe; John Botterill, Easthorpe.

SHEEP.

Class 6.—Rams of any age, for general farming purposes, being the sole property of the exhibitor, John Taylor, Burnham, £10.

Competitors.—John Taylor, Burnham; John Taylor, Burnham; John Taylor, Burnham; George Bobinson, Carnaby; George Robinson, Carnaby; Samuel Judd, York; Samuel Judd, York; Robert Foster, Lutton; George Leighton, Osgodby; John Simpson, Hunmanby; John Simpson, Hunmanby, George Leighton, Osgodby.

Class 7.—Pen of seven wether shearlings bred by and the *bonâ fide* property of the shower; a silver cup, value ten guineas (offered by Lord Hotham, M.P.) with a sweepstakes of £1 each added. George Piercy, Kirkburn; one year old.

Competitors.—Mr. Wilberforce, Wetwang; John Foster, Southburn; Henry Hill, Sledmere Field; Peter Gofton, Dowthorpe Hall; Robert Danby, Routh; George Piercy, Kirkburn.

Class 8.—Pen of five gimmer shearlings, bred by and the *bonâ fide* property of the shower; a silver cup, value ten guineas (offered by James Walker, Esq., of Sand Hutton), with a sweepstakes of 20s. added. Mr. Hornby, Flotmanby.

Entries.—John Foster, Southburn; Mr. Hornby, Flotmanby; Henry Hill, Sledmere Field; E. W. Smith, Esq., Routh; Timothy Wheatley, Neswick; Mr. Etherington, Spring Dale; Mr. Harland, Holme.

Class 9.—Pen of five breeding ewes, that have suckled lambs up to the time of the show; the lambs to be shown with the ewes. Mr. Mathison, Beverley Parks, £3; E. W. Smith, Esq.. Routh, £1.

Only two competitors.

HORSES.

Class 10.—Stallions for hunters that have served half-bred mares, at not more than £3 3s. each, cup (offered by H. Broadley, Esq., M.P.) value £10; Mrs. Crump, Skidby, "Falcon."

Competitors—William Bower, Pickering Marshes, "Marcion"; John Scholfield, Flaxfleet, "Hunmanby"; Henry Hill, Sledmere Field, "Memnon Junior"; Henry Fussey, Sproatley, "Dash"; Mrs. Crump, Skidby, "Falcon"; Thomas Howden, Great Driffield, "Cavendish."

Class 11.—Stallions for coach horses, Richard Waller, Welburn, "Greylock," 5*l*.

Competitors.—Richard Waller, Welburn, "Greylock"; Mr. Simpson, Sanholme, "Sancho"; Aaron Hairsine, Holme-upon-Spalding Moor, "Admiral"; Botterill Johnson, Frodingham Bridge, "Faulconer"; David Holliday, Stoneferry, "Venture"; Christopher Gardham, South Cliff, "Dependent"; Mr. Catton, Cranswick, Ditto, Ditto; Mr. Orrah, Etton, "Murat"; Calvert Horsman, Thearne, "Prince Albert"; John Hance, Garton, "Candidate."

Class 12.—Stallions for roadsters, Philip Ramsdale, Goodmanham, "Phenomenon," 4*l*. Phenomenon is a beautiful roan, stands 15 hands 2 inches high, and is said by some to be the best and fastest trotter ever offered to public notice. His sire, the Norfolk Cob, belonging to J. W. Theobald, Esq., of Hacknell, in Surrey; his dam, a very fast trotting roan mare, by Old Fireaway, the property of J. Reed, Esq., of Long Sutton, which mare has bred Mr. Bond, besides this animal, several colts of great value, six of which sold for 846*l*. Phenomenon, we are informed, beat the celebrated trotter Rattler, by 100 yards in 300.

Competitors.—John Jackson, Allerthorpe, "Merryman"; Philip Ramsdale, Goodmanham, "Phenomenon"; Matthew Piercy, Lockington, "Performer"; George Scott, Market Weighton, "Little Wonder."

Class 13.—Stallions for cart horses, Thomas Roydhouse, Preston, "Active," 4*l*.

Competitors.—William Carrick, Ellerby, "Robin Hood;" Robert Dawson, Sewerby Field, "Noble;" Mark Milner, Finley, "Nobleman"; Thomas Roydhouse, Preston, "Active."

Class 14.—Mares for breeding coach horses with foals, Mr. Hornby, Flotmanby, 5*l*., for the bay mare, 6 years old, by Old Trojan, dam by Elegant, for which horse Mr. Medford, we understood, refused 400 guineas; grandam by Mr. Lamplugh's famous Volunteer, great grandam by Mr. Ounsley's noted coach horse of Seamer. The colt foal by Mr. Johnson's grey horse Falconer, whose sire, Falcon, carried off the prize in another class.

Competitors.—Mr. Hornby, Flotmanby, Nicholas Freeman, Monkton Walk; Thomas Windas, Beverley Parks; John Jackson, Preston; John Easingwood, Everingham; Thomas Robinson, jun., Ellerker; Robert Ranson, Wawn; Mr. Wheatley, Catfoss; Matthew Pearson, Lockington; George Wright, Arram; Mr. Stephenson, Skidby; John Halliday, Thearne.

Class 15.—Mares for breeding hunters, with foals, William Robinson, Langtoft, 5*l*.

Competitors.—William Robinson, Langtoft; Thomas Barker, Newport; Charles Greenwood, Beverley; Daniel Layborne, Eske; Ditto, Ditto; Mr. Stephenson, Skidby; Thomas Lister, Beverley.

Class 16.—Roadster mares without foals, above four and not exceeding ten years old; a piece of plate value 10*l.* 10s., (offered by the trade of Beverley), with an entrance of 10s. each added, with the exception of 1*l.* to be given to the second best. Five subscribers or the premium will be withheld for the following year. Thomas Almack, Bishop Burton, first; John Kemp, Great Driffield, second.

Competitors.—Mr. Penrose, Sherburn; John Fisher, Leckonfield Grange; George Piercy, Kirkburn; George Wood, South Dalton; George Turner, North ewbald; Thomas Almack, Bishop Burton; John Kemp, Great Driffield; Henry Casson, Hull; William Brigham, Beverley; John Foster, Hedon.

Class 17.—Mares for breeding roadsters with foals, John Waldby Duggleby, Watton, 4*l.*

Competitors.—Thomas Windas, Beverley Parks; William Moore, Burn Butts; John Walby Duggleby, Watton; George Scott, Market Weighton; George Grubb, North Dalton.

Class 18.—Cart mares, Mrs. Roantree, Market Weighton, 4*l.*

Competitors.—Mr. Gofton, Pockthorpe; Robert Artley, North Burton; Thomas Carrick, West Newton; Mr. Wilberforce, Wetwang; Mr. Farthing, Warter; George Piercy, Kirkburn; Mr. Farthing, Warter; Mr. Horsley, Cherry Burton; H. Woodall, Esq., North Dalton; John Simpson, Hunmanby; Ditto, ditto; Mrs. Roantree, Market Weighton; Robert Fisher, Leckonfield.

Class 19.—Coaching geldings, three years old, George Wood, South Dalton, 3*l.*

Competitors.—John Tate, Tunstall, Charles Watson, Seaton Ross, George Wood, South Dalton.

Class 20.—Coaching Geldings, two years old, Mr. Hudson, Catfoss, 2*l.*

Competitors—Charles Watson, Seaton Ross; Robt. Ransom, Wawn; Mr. Stephenson, Skidby; John Johnson, Foston; Lawrence Stephenson, jun., Cherry Burton; Mr. Hudson, Catfoss, Do., do.; Lawrence Stephenson, sen., Cherry Burton.

Class 21.—Coaching geldings, one year old, Wm. T. Popple, Brandesburton, 2*l.*

Competitors—John Wilson, jun., Garton; Thomas Thrusk, Aike; John Horsdill, Patrington; Wm. T. Popple, Brandesburton; Thos. Holtby, Rotsey.

Class 22.—Coaching fillies, three years old, Wm. Appleton, Cliff, 3*l.*

Competitors—Wm. Shepherd, Wintringham; Mr. Megginson, Towthorpe; Mr. Clarke, Hunmanby; Wm. Appleton, Cliff; Wm. Leak, Cliff; Mr. Horsley, Cherry Burton; Benjamin Thompson, Meux; Lawrence Stephenson, sen., Cherry Burton; Calvert Horseman, Thearne.

Class 23.—Hunting geldings, three years old, George Wood, South Dalton, 3*l.*

No other competitor.

Class 24.—Yearling colts, by Revolution, (offered by E. H. Reynard, Esq., of Sunderlandwick), James Richardson, Sigglesthorne, 6*l.*

Competitors—George Wood, South Dalton; Wm. Moore, Burn Butts; James Richardson, Sigglesthorne.

Class 25.—Yearling fillies, by Revolution (offered by ditto), 4*l.* No entry.

Class 26.—Colt foals by Sir Walter, (offered by Mr. John Langdale, of Leckonfield), Thomas Thrusk, Aike, 2*l.*

Competitors—Thos. Thrusk, Aike; George Wright, Arram.

PIGS.

Class 27.—Boars, large breed, William Moment, Walkington, 2*l.*

Competitors—Mr. Harker, Sunderlandwick; Mr. Swaddle, Killingraves; Wm. Spenceley, Beverley; James Skelton, Lockington; John Harland, jun., Barmston; Wilson Whiteing, Leven; Wm. Moment, Walkington.

Class 28.—Boars, small breed, E. W. Smith, Esq., Louth, 2*l.*

No other competitor.

Class 29.—Sows or gilts, large breed, Thos. Johnson, Preston, 2*l.*

Competitors—Mr. Harker, Sunderlandwick; Mr. Swaddle, Killingraves; Wm. Sanderson, Cherry Burton; Wm. Winter, Beverley; John Jackson, Esq., Riston Grange; Thomas Johnson, Preston; Robert Ashby, Leckonfield; David Dickinson, Patrington.

Class 30.—Sows or gilts, small breed, Jas. Teale, Holme, 2*l.*

Competitors—James Teale, Holme; Wm. Crosskill, Beverley; D. Burton, Esq., Cherry Burton; E. W. Smith, Esq., Routh, Ditto, Ditto.

Class 31.—Sows or gilts for farming purposes, Mr. Swaddle, Killingraves, 2*l.*

Competitors—James Teal, Holme; Mr. Harker, Sunderlandwick; Mr. Swaddle, Killingraves; Wm. Sanderson, Bishop Burton; Wm. Winter, Beverley; John Jackson, Esq., Riston Grange; Thomas Johnson, Preston; Robert Ashby, Leckonfield; David Dickinson, Patrington.

Sweepstakes of 10s. each, for rams of any age, George Robinson, Carnaby.

Two subscribers, namely, Mr. Robinson and Mr. Samuel Judd of York.

IMPLEMENTS.

John Dry, Beverley—Improved Thrashing Machine, by horse power, 3*l.*

Messrs. Barrett and Ashton, Hull—a variety of patent ploughs and harrows, 1*l.*

Wm. Crosskill, Beverley—Turnip-cutter, similar to the one which obtained the prize at Bristol, 1*l.*

Wm. Crosskill, Beverley—Two horse power straw and hay cutter, 1*l.*

Mr. Dale, Beverley and Bridlington—Steamer for steaming potatoes or any other kind of vegetables, 10s.

EXTRA STOCK.

Thomas Hornby, Flotmanby—one fat ewe, medal.

Mr. Watson, Waudby—three years old fat steer, medal.

Rev. L. Dennis, Meux—two four year old fat oxen, medal.

The following extra stock was likewise exhibited:—

Johnson, William, Riplingham Grange—one ram. Nicholson, Francis, Appleby, Linconshire—one stallion. Whitton, W., Beverley—colt foal, by Mercury. Tate, Jno., Tunstall—four years old hunting gelding. Parker, Thomas, Newport—four years old coaching stallion, Paulinus. Ford, Thomas, Lund—grey mare. Appleton, William, Cliff—coaching filly. King, Stephen, Lund Wold—two years old coaching stallion. Leak, Francis, South Dalton—hunting mare, with a foal. Hill, Henry, Sledmere Field—humbled cow. Watson, Mr., Waudby—two heifers, four years old. Ditto—two ditto, one year old. Fussey, W., Beverley—two years old bay mare. Orrah, Etton—five years old coaching mare, without a foal. Johnson, J., Foston—two years old coaching stallion. Johnson, John, Foston—hunting mare. Stephenson, L., Cherry Burton—coaching mare. Botterill, J., Easthorpe—three yrs. old heifer, with a calf. Ditto—two sucking calves. Roydhouse, Thos., Preston—four years old coaching mare. Wilson, Robert, Great Driffield—a mare. Fisher, Robert, Leckonfield—two rams (2 shear). Johnson, Richard, Holme on Spalding Moor—two years old colt, by Brown Shales. Richardson, Mr., Sigglesthorne—yearling coaching stallion. Moore Ralph, Brandesburton—two cows. Hance, J., Garton—coaching stallion, Candidate. Hall, J. Esq., Scorbro'—four four years old hunting geldings. Howdon, T., Driffield—black mare, four years old, by Cavendish. Robinson, G., Carnaby—three rams. Gillson, George, Beverley—one fat ewe.

The Chairman said, he must address himself to the labourers and servants in husbandry who appeared there to receive the prizes which had been awarded to them. They appeared before the meeting in the very honourable and enviable position of claiming the premiums which had been awarded for good conduct, for industry, and integrity, from the association. Some of them were distinguished for bringing up the greatest number of children by their own individual means—some for the neatness and cleanliness of the land of their cottage gardens—some for faithfulness to their masters, and others for a higher claim for higher qualifications and attainments than had fallen to the lot of their neighbours. And he wished to impress upon them the important fact that the names of all the parties who received prizes that day from the association would be recorded in the books of the association. *(Applause.)* He hoped they would continue to conduct themselves in such a manner as to deserve approbation, as they had shown they had done, and he trusted the happy results of their good conduct would induce others to try and follow their example. *(Applause.)* The conduct which had been pursued by them conferred much honour on themselves, and reflected the highest credit on the neighbourhood in which they were living *(applause)*; and he hoped they would continue to act as they had hitherto done. *(Continued applause.)* The secretary would give to them the prizes awarded.

The labourers then retired amidst loud cheering, and were followed by Mr. Boyes, the secretary, who gave to each the prize for which he was the successful candidate.

The Chairman again rose and said, the East Riding Agricultural Association was then celebrating its sixth anniversary, and he flattered himself he was not wrong in saying that its formation had conferred great practical benefits upon the Riding in stimulating to greater exertions those engaged in agricultural pursuits. *(Applause.)* They would allow the cultivation of the land—the improvement of the fertility of the soil—to be one of the most delightful and instructive pursuits any one could be engaged in. *(Applause.)* It enables him by the aid of skilful industry, and by the application of science, to effect improvements which, under Providence, could not fail to be of great advantage to the present and to future generations. *(Continued applause.)* He looked upon it that these associations urged persons to devote much of their time not only to the general routine, but also to the study and improvement of agriculture, and to the productiveness of the land. *(Applause.)* He was aware that this association would comprise many amongst its members who, by their liberality and disposition to try every method calculated to improve the cultivation of the land, and in the rearing and breeding of stock, had raised the fame of the East Riding as an agricultural district. *(Hear, hear.)* And he thought that a meeting like the present, where prizes were awarded to successful competitors, and the benefits of the improved stock and implements clearly exhibited, tended much to promote the interests of agriculture. *(Hear.)* For there parties who were engaged in agricultural pursuits met together and conversed upon their favourite occupation, and those who had tried any new method in agriculture had an opportunity of communicating to their less enterprising neighbours the results of the experiments which they themselves had made. By this means it became more publicly known what system of farming was the most productive and the most useful, and in this way also was spread abroad what discoveries were made in agricultual science. These mutual communications no doubt had the most beneficial results, causing great improvements to be effected in the cultivation of the land, and on the land depended, and always would depend, the great resources of this country. *(Applause.)* He told them that he felt they, the agriculturists of the East Riding, by their practical experience in all matters relating to agriculture as well as by the spirited exhibition of stock which they had that day witnessed, had set an example which was worthy of imitation in all other parts of the kingdom. *(Loud applause)*. And he trusted that a desire to effect the greatest benefits to agriculture, as well as zeal and heartfelt sincerity in the cause, would ever characterise the proceedings of this association. *(Applause)*. He gave them "Success to the East Riding Agricultural Association." *(Loud and protracted cheering)*.

E. W. Smith, Esq., of Louth, on rising, was received with loud and long-continued cheering. After thanking them for the kind and enthusiastic manner in which they had received him, he proceeded to observe that he had particular pleasure in proposing the toast which had been assigned to him, and he was sure they would have particular pleasure in drinking it, especially when they considered the way in which the gentlemen to whom the toast referred had awarded the prizes on that occasion. *(Hear.)* He was sure, although it was their sixth anniversary, that it was with pain he saw their meeting become less in quantity than it had been in former years. But when they came to consider that the Royal Agricultural Association of England had sprung into existence since theirs was formed, and also when they considered the operations of the Yorkshire Agricultural Association, which every year strode very rapidly on their heels in holding its exhibitions, they could not be surprised that the numbers before the East Riding Agricultural Association had decreased. *(Hear, hear)*. But he hoped that more good was to be derived from the operations of the society than by the mere exhibition of stock for a day. *(Hear.)* Their association had another meeting during the year, on which occasion they also required the assistance of other gentlemen to act as judges, and he called upon them likewise to drink the healths of those gentlemen. *(Hear, hear.)* They were indebted to those gentlemen who assisted them on the occasion when they held a meeting for the purpose of awarding a large number of prizes for the best work done in the field. And they were also indebted to the chairman for the prizes given by him for the best plough work. *(Applause.)* The operations of the East Riding Agricultural Association were likely to produce the most beneficial results, if no other advantage was derived than the benefit conferred upon the country by trying the kind of manner in which the ploughmen did their work, and in giving prizes to industrious and worthy agricultural labourers and servants, thereby stimulating others to follow the example which had been shown by the successful competitors. (*Loud applause.*) The first time they had a ploughing match under the auspices of the society it was asked whether wheel and swing ploughs were to be allowed to plough together. One of the judges, however, stopped him (Mr. Smith) and said—"Mr. Smith, it won't do to put wheel and swing ploughs together, for the use of wheel ploughs enables a person who might be ignorant of his business to have an advantage over his competitor—in fact in allowing swing and wheel ploughs to plough together you do not give the same encouragement to the man who has taken the trouble to learn to plough with the swing plough as you do to the man who ploughs with wheels to his plough." (*Hear.*) In fact a boy could work a wheel plough, while he could not work a swing plough in the same way. (*Hear.*) He must say that he thought the association had been of very great benefit to the riding in introducing to the notice of the members and the public new implements of husbandry. (*Applause*). Although he must say that their meetings had fallen off in the exhibition of stock—particularly of horses—whether that might be accounted for in the demands made upon them by foreigners he could not say—but their show of implements was greatly improved (*Applause*). And any gentleman who had gone into the show ground that day would have seen improved agricultural implements, calculated not only to please fancies and vagaries, but likewise fitted to be very useful in agricultural operations (*Hear, hear*). Some of the gentlemen who had distinguished themselves in the exhibition of implements he then saw around him; and he was quite sure that they were all much indebted to the exhibitors of agricultural implements for the trouble they had taken in bringing their implements from so great distances, especially when they considered that the sums competed for were small (*Applause*). He hoped that the exhibition of those implements would prove of advantage, not only to the exhibitors, but also to the members and friends of the association (*Hear, hear*). He was sure that the judges for sheep would allow with him that they had not had that day so large a quantity shown as on former occasions. But he did say that in the class of gimmers and wethers they had never had a better show since the first meeting of the association (*Applause*). The wethers which had been that day exhibited were, he thought, the best which they had had. Although there were only two competitors, he believed they strove most lustily for the cup which was given by their worthy president. He (Mr. Smith) was really gratified to find that Mr. Hill could be beat for once (*Laughter*). But although he had been beaten his sheep reflected upon him the greatest credit (*Applause*). The judges of horses had certainly not had such an exhibition to inspect as in former years. But they had all felt the badness of the times a little, and had not taken that pains, perhaps, to force stock as they had done in former years (*Hear, hear*). But he was sure those gentlemen would receive the hearty thanks of the company for the manner in which they had discharged their different duties, and he hoped, if circumstances should call for it, that they should have the benefit of their services on a future occasion (*Applause*). He begged to propose the healths of the judges who had favoured them with their services on that occasion (*Loud applause*). The toast was drunk with all the honours.

George Francis Nicholson, Esq., of Appleby, Lincolnshire, acknowledged the compliment paid to the judges. He was sorry that the honour of returning thanks had devolved upon him, he being the youngest judge. He might mention that so far as he and his colleagues were concerned they were unanimous in their decisions, and that gave him great confidence in saying that so far as their judgments went they had done justice (*Hear, hear*). So far as the standard of judgment went it all depended upon themselves (the members of the association). They (the judges) were brought from a distance merely to pass their opinions upon the relative merits of the stock or implements exhibited, but still they all had a judgment to know what stock they (the judges) would take home with themselves (*Hear*). They had had many difficulties to contend against, because in improving the stock in this country they ought to have some pure blood to go by, and then they could make crosses after that so far as they might judge for themselves best. With regard to sheep, cattle, and pigs, of course it was important to consider which were the most productive as to mutton, beef, and pork. So far as he was concerned he could only say that the judges were highly honoured by the compliment which had been paid to them. And he might say that, so far as their humble judgments had enabled them, they had in giving their decisions acted with impartiality (*Applause*).

The Rev. John Blanchard, of Middleton, rose to propose the healths of those who had been the successful competitors. He was sure that the results which had followed their exertions would be very pleasing to them, and an ample reward for the trouble and zeal they had shown in the success of the society. He only hoped that the success which they had experienced would stimulate them to greater exertions in future (*hear*); and he was sure that no bad feeling existed in the minds of those who had been unsuccessful towards their more fortunate rivals (*Loud applause*). He hoped those who had on this occasion been unsuccessful would exert themselves so much the more in order that they might be the successful competitors on a future opportunity. He begged leave to propose the healths of the successful competitors that day (*Loud applause*).

George Wood, Esq., of South Dalton, returned thanks. He felt bound that he was entitled to return thanks for the honour which had been conferred upon him and his meritorious colleagues in drinking their healths. He could only say that he complimented the judges on their superior judgments, and he had great pleasure in drinking all their good healths (*A laugh*).

Robert Denison, Esq., (the vice-chairman), was welcomed with two or three rounds of enthusiastic cheering. When it had subsided, he said—In the first place let him return thanks for the kind manner in which they had received him. Situated as he was, removed from the East Riding, he still clave to every opportunity that occurred of coming again among those whom he was always so delighted to meet (*Cheers*). If ever there was, amongst all the various meetings which he had the honour of attending—if there was any one that gave him more sincere satisfaction than another, it was when he met those around him who formed the toast that he was going to propose, namely, the tenantry of the East Riding of Yorkshire (*Loud applause*). It was for the welfare of that tenantry that he continued to hold the large stake in farming that he did in that Riding, being determined that there should be nothing wanting on his part as far as any agricultural improvement could be tried, that should not be tried by him in his capacity as a farmer (*Cheering*). Every person who went across the district that composed the East Riding of Yorkshire would bear him out in saying that there was not only a marked difference, but a very distinguishable marked difference in the state of the agriculture of that Riding to what it was six years ago (*Hear*). He remembered an honourable baronet who threw out a taunt in that very room—not in that very room, but at one of these agricultural meetings—that as he came across the country from where he came from to Beverley, he was ashamed to see the state of the crops from the yellow appearance of the fields. But now let that honourable baronet ride across the country in the same way as he did then, and he would see none of those yellow appearances, except the yellow appearance of the corn. If this be the case, that was one strong reason for supposing that the agriculture of this district was superior to what it was formerly. The change was visible in the different appearance and the cleanliness of the crops. They were told that it was their duty as well as their interests as agriculturists to increase the quantity of corn grown upon their lands, and that if they could by any possibility increase the amount of production by two bushels of corn per acre, that that would be sufficient, taking the whole kingdom, to hinder any corn from being shipped to be brought into the country for the support of the nation. Now, he called upon any person there present to say whether during the last six years there had not been decidedly more than two bushels of corn grown per acre upon the East Riding in general above the usual production six years ago (*Applause*). And he looked forward to the time ere other six years should have elapsed when a greater quantity might be grown per acre than even what he had mentioned; but it depended, he was convinced, upon themselves, whether it should be so or not (*Hear*). They might meet in that room—they might bring fat stock and good stock, as had been done so effectually that day—but unless they set their shoulders to the wheel, every one of them, the good results that would flow from their united exertions would certainly not take place (*Hear*). He looked not forward to the Yorkshire Agricultural Association, nor to the Royal Agricultural Society of England, for the greatest benefits—but he firmly believed that if they, the East Riding Association—there little association there—if they would set their shoulders to the wheel they would effect more good in increasing the production of the land than any agricultural association that had been formed hitherto (*Loud applause*). There were premiums awarded at the different agricultural association meetings established in different parts of the country—there were premiums given for almost everything, but though there were gentlemen who formed these associations and who belonged to them, and who tried every experiment that relates to manure—to different manures recommended—still if they had not an account of those experiments put down upon paper in order that a knowledge of them may be acquired by the members of the association, the experiments do no good whatever (*Hear*). Now, what he proposed doing to remedy this defect was simply this, that a certain number of members should pledge themselves to send an account of some experiment—some experiment be it ever so trifling—(*Hear*)—which should be paid for—not by way of premium, but by way of covering the expense of printing, the payment to come out of the funds of the association. They should then have an account of every experiment that was made throughout the district brought immediately before the members of the association. And thus each member would have the opportunity and pleasure of carrying forward any of those experiments that suited his fancy and interest (*Loud applause*). There was one thing—one circumstance—that he could not help mentioning with regard to the welfare of this agricultural association—and that was one little circumstance that occurred at the meeting at Bristol of the Royal Agricultural Society. They were all perfectly well aware that upon trade—and almost upon trade—were they dependent for that ascertained power of selling their stock and their produce to advantage, that is paying the farmer. He did not wish to enter at any length upon a subject which might occupy them for a length of time, if once entered upon; but he might observe that the American minister he (Mr. Denison) thought in the speech which he delivered at the meeting of the Royal Agricultural Association at Bristol, did a considerable deal of good in this country by allaying the fears which might have existed of America not becoming the purchaser of our goods, and he thought if confidence could be restored between America and this country, things would be placed in a more favourable position, and prices would be more remunerating. The toast assigned to him was "The tenantry of the East Riding of Yorkshire;" and he had the greatest pleasure in proposing it, and hoped it would be drunk with three times three (*Loud applause*). The toast was drunk amidst the loudest plaudits.

R. Denison, Esq., again rose and said, would they allow him to ask those gentlemen who would pledge themselves to try some experiment to rise up and show themselves. (Several gentlemen in the room rose up in compliance with the request.) It was not that he wanted a long essay upon any one given subject, but if any person would try whether one or two loads of manure on a ridge of turnips afforded the greatest comparative crop, an account of such an experiment would be interesting and make it worth printing. He begged leave to mention one circumstance before sitting down. He begged to state that the small farm which he had in the West Riding he had turned into an experimental farm (*Hear*)—so that he should be able to tell them the results of experiments made with all the different manures brought out in the production of wheat, barley, oats, turnips, and potatoes. He begged of them to take care of guano, for it had destroyed all his onions and turnips. He wanted experiments, and therefore it was that he was desirous that accounts of them when made should be sent in and printed in a small pamphlet, so that every member of the association might get a copy of it and see what had been the result of such experiments. He thought it would aid them in making the land not tired of any particular given crop. The wolds were as tired of seeds as possible, but he had no doubt that some of those manures would grow seeds as often as possible, and grow wheat as often as they pleased, instead of the land getting tired of a particular crop, as at present. Therefore it was that he was desirous to have an account of all experiments in agriculture made by their members printed and circulated among them. He cautioned them against supposing that it was sufficient to show stock on the day of the annual meeting of the society, and at the dinner simply to drink healths—the great object which they should have in view ought to be the public benefit. *(Applause.)* After a short pause, Mr. Denison again rose and said that he could at once immediately suggest an experiment which they might make with great advantage to the interests of agriculture. Here was an experiment—they might have large and small pigs, and take notice of the food given to each, in order that they might see whether it was more advantageous for every body to have a great pig or a small pig. *(Hear.)*

J. R. PEASE, Esq., of Hesslewood, said he felt honoured in being called on to propose the next toast on the chairman's list; he only felt himself incapable of doing justice to it, and he wished that some gentleman had been there who was better fitted by his abilities to do more ample justice to the toast than he felt himself able to do. The toast which he had the honour to propose was the President of the Association. *(Applause.)* He felt fully convinced that that toast would be responded to with every mark of respect, it was so fully entitled to it. *(Hear, hear.)* When they considered the situation of the noble lord, and when they remembered the affliction it had pleased an all-wise Providence to lay on him for such a lengthened period, on account of which they must sympathise deeply with his lordship, for it had pleased Providence to afflict him for thirteen months with a severe and protracted illness, he had no doubt they would heartily respond to the toast. It would have given him (Lord Hotham) much pleasure to have been there that day to take the chair which had been so well and so ably filled by the vice-president of the association. *(Applause.)* It happened to him (the speaker) to have occasion to write to his lordship a few days ago, and in making an allusion to the state of his health, his lordship observed that he thought he was slowly but surely progressing to convalescence. *(Applause.)* That announcement would be received with gratification by every one present. He begged to propose Lord Hotham, the President of the Association, with every wish that his restoration to that state of good health which throughout his life he had so long enjoyed might speedily take place. *(Loud applause.)* The health of Lord Hotham. The toast was drunk with three times three, and three cheers more.

R. DENISON, Esq., said he was sure Lord Hotham would be extremely annoyed if he thought there was no one in that large assembly who would return thanks in his name for the kind manner in which they had received the toast proposing his health (*hear*). He (Mr. Denison) was willing to return those thanks which Lord Hotham would have done himself if he had been there; and he could only repeat the anxious wish expressed by Mr. Pease that his lordship might be restored to them in the enjoyment of all his energy and all his powers, and that ere the next year had passed he might be there to meet them all. *(Loud applause.)*

R. WILEY, Esq., of Beverley, said, he trusted it could not but be matter of congratulation to them all that they had secured the assistance and presence of their friend Mr. Walker. *(Applause.)* That gentleman's well-known character among them, and more particularly the sincere and indefatigable interest which he had uniformly taken in the welfare of agriculture, and the ready manner in which he ever came forward to assist in the promotion of those objects which were of so much importance to them all, rendered it altogether unnecessary for him to detain them at greater length in proposing the health of Mr. Walker. *(Loud applause.)* Therefore he had only to express his gratification in proposing the health of the Chairman. *(Great cheering.)*

The CHAIRMAN on rising to return thanks was hailed with loud and long continued cheering. He said, he must confess that he felt himself quite overpowered by the very kind reception which they had just given to him. He considered that a mark of their kindness towards him which he certainly did not look for, and which he had no thought or expectation they would have evinced towards him. On the present occasion he also felt that he perfectly came up to the character his friend Mr. Wiley was pleased to express of his feelings towards them. *(Hear.)* And he felt gratified to them for the kind manner in which they had received the proposal of his health, and it was the more gratifying as that was the second time he had had the honour of presiding at their annual dinner. But gratifying as was that occasion to him, it was still with regret that he found himself occupying the position he then did in consequence of the indisposition of the noble lord. He regretted that they had not had the benefit of Lord Hotham's services on that occasion, and that indisposition was the cause which prevented his lordship from coming down into Yorkshire and witnessing the success of the association of which he is the president. He (the chairman) thought he could congratulate them on having had a very satisfactory meeting that day, and that he had the honour of addressing them in as interesting a party as on any former occasion, who were all interested in the promotion of agriculture, and anxious to get, through the operations of such an institution, the published experience of men well versed in all matters relating to agriculture, feeling, as he knew they did, that the best interests of their country were involved in carrying out the great objects which such an institution was intended to promote. *(Hear.)* He thanked them for the honour which they had conferred upon him in calling him to the chair, and in drinking his health. Before he sat down he begged they would permit him to propose a toast—the health of a gentleman who held a high office in that town, and who had that day honoured them with his presence. *(Applause.)* He was sure the agriculturists of the East Riding would feel highly gratified when they found their civic rulers taking an interest in agriculture. *(Hear.)* He begged to propose before he sat down the health of the Mayor of Beverley. *(Loud applause.)*

PENNOCK TIGAR, Esq., Mayor of Beverley, was loudly cheered on rising to return thanks. He said he did not expect to have had the honour of being called upon so early to return thanks for the toast "the Mayor of Beverley." He thanked them for the kind manner in which that toast had been proposed and responded to. He did assure them that both the council and himself would always have the greatest pleasure in promoting the interests of the agricultural associations within the precincts of

Beverley, and they hoped sincerely that it would go on increasing in numbers and usefulness. He had now a toast to propose, and that was the vice-president of the association and of the committee. He had great pleasure in proposing that toast to their notice, and from the very able manner in which their vice-president had conducted himself as chairman, he was sure that he was highly worthy of all the honour that could be paid to him. (*Loud applause.*) The committee were also highly deserving of the thanks of the members of the association, for were it not for an efficient and working committee what would become of the association, and therefore it was that he did think that the compliment about to be paid to the committee was justly their due. (*Applause.*) He would make a few suggestions in reference to some of the objects of such an association. Although he was not an agriculturist himself he might be permitted to do so—he had not been brought up in the pursuit of agriculture, but if he had been an agriculturist he thought he should have great pleasure in showing any of his stock at that meeting. (*Hear.*) The suggestions which he was desirous of throwing out had reference to manures. He was afraid that there was not sufficient attention paid to the manures of the country. (*Hear.*) He had no doubt that England would produce manure sufficient for the wants of the country if it was properly attended to. But they wished to employ guano, prussiate of potash, or nitrate of soda. He, however, would strongly recommend them to get a practical chemist to assist them—they had sufficient manure in the bowels of the earth, where there was enough to repay any labour that might attach to obtaining it. It would be better to employ such manure as that than to have recourse to foreign manures. They had the carbonate of lime in abundance, which would prove of advantage to them as manure. There was another manure which he would recommend to them which he thought had not found its way into that part of Yorkshire—and that was the sulphate of lime, generally called gypsum. It was to be had up the Trent, in Derbyshire, and different places, and it contained a considerable quantity of ammonia. He also would call their attention to the wet manure which they were not using, and he would remind them of the water which ran away from dunghills, which was very serviceable in bringing up their grasses. They should also pay attention to another most valuable manure—and that was the urine from their cattle, which produced a considerable quantity of ammonia. After some further observations of a similar tendency the speaker concluded by proposing the health of the Vice-President and the Committee. (*Applause.*)

The CHAIRMAN said he had been waiting some time for some other gentleman to return thanks for the last toast who was more competent to respond to it than he was, as in consequence of the distance of his residence from the town of Beverley he felt that he had not been able to attend the meetings of the committee. And some other member ought to have returned thanks for the toast instead of the vice-president who had already trespassed so much on their attention. (*Applause.*) With regard to the meeting they had had that day, so many gentlemen had already addressed them with regard to the stock, so well able to form an estimate of the stock, that he would not like to trespass further on their time; but he must say, he would say, that he regretted he did not see the implement of husbandry by Mr. Crosskill, of Beverley, which was called a grass cultivator, and which was most likely to be of great advantage in economising manure.—(*Hear.*) And he thought it reflected much credit upon the East Riding of Yorkshire that Mr. Crosskill had carried off several prizes for improved implements at the exhibition before the Royal Agricultural Society at Bristol. (*Loud applause.*) Before he sat down he begged to propose the toast of the unsuccessful competitors. (*Applause.*) He trusted that no disappointment would deter them on another occasion from again coming there and exhibiting their stock to the meeting, and that having obtained more practical experience from what they had seen they might contend more successfully and carry off the desired premiums. The greater the number of competitors, the greater was the satisfaction to the association, and the greater the honour to those who received the prizes, and the less the disappointment of those who were unsuccessful. (*Loud applause.*) He begged to propose the healths of the unsuccessful competitors.

HENRY HILL, Esq., Sledmere Field, acknowledged the toast on behalf of the unsuccessful candidates.

R. DENISON, Esq., announced his intention of giving a prize of five pounds at the next meeting of the society for the best pen of 10 gimmer shearlings picked out of a man's stock the day before the show, (The announcement was received with great applause.)

One or two more toasts were drunk, after which the chairman left the room, followed by most of the company.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Wednesday, July 27.—Henry Handley, Esq., in the chair.

The following communication on the Dyock Oat has been received from the Rev. R. W. Fisher, of Hill Top, near Kendal:—

"A Report of a series of trials of a new variety of oat, called the Dyock Oat, by Mr. John Watson, of Ledmore, near Brechin, having appeared in the 'Transactions of the Highland and Agricultural Society of Scotland,' in Sept. 1840, and the results being highly favourable, and possessing peculiar claims to the attention of those occupying lands of considerable elevation, I was induced to make application for a small quantity of seed. In the spring of last year I received from him half a quarter, and he kindly added many valuable suggestions for my guidance in making the experiment.

"So far as the return of one year, and the appearance of my crops the present season, can be considered as bearing testimony to the value and probable utility of this variety of oat, I am enabled to confirm the favourable opinion expressed by Mr. Watson; and it is with a view of introducing it to more general notice that I wish briefly to lay before you a few details of the experiment. I would first premise that the land on which I sowed the half-quarter is a poor red soil, resting upon a clayey subsoil, at an altitude of from 400 to 500 feet above the level of the sea, and was enclosed from a common about twenty years ago. A poor crop of turnips had been grown upon it the year preceding, with 20 bushels of bones to the acre, one half of which was drawn, and the other eaten off with sheep. The alleged qualities of the oat in question, which induced me to make trial of it, were early maturation and an abundant return. As a test of the former, I selected the potato-oat to sow with it in the same field, upon land of precisely the same texture and quality. The early part of the season of 1841 was remarkably fine here, and the potato-oats were sown on the 18th of March, the ground being friable and in beautiful order. On the following morning the Dyock oats were sown; rain having interrupted the sowing on the preceding afternoon, which continued during great part of the night of the 18th, rendered the state of the soil not so favourable for harrowing in the seed. In both instances the seed was sown broadcast, at the rate of 5 bushels to the acre. The crop was better than I anticipated from the state of the field, growing rather vigorously, but with a perceptible advantage, as regards forwardness, in favour of the new variety; though, when reaped, the straw of the potato-oats was, I think, a little longer. These were reaped on the 20th of September; the Dyock oats having been cut on the 31st of August. The returns were, from the potato-oats 6 9-20 times the seed; from the Dyock oats 8¾ times. The former weighed 36 3-5lbs. per bushel, and yielded of oatmeal 17 3-20lbs. per bushel; the latter weighed 40lbs.[*] per bushel, and yielded of oatmeal 21 7-9lbs. per bushel. The straw is of excellent quality, well adapted for fodder. This oat takes its name from a Mr. Dyock, who, I believe, first raised the variety in Aberdeenshire. If, after a further test, its good properties be maintained, there is little doubt of its proving a highly valuable acquisition, especially upon the cold and elevated lands of the northern part of the kingdom. Mr. Watson, from whom I had my seed, has tried it for several years, and speaks of more abundant returns, and of heavier grain than I have detailed above. He states that it usually arrives at maturity from 12 to 16 days before potato-oats; and, I believe, the higher the altitude, the greater is the disparity in this respect. It is rather small in the grain, but is distinguished from several other early varieties of the oat by the thinness of its husk. I would refer those who are anxious for further information to the 50th No. of the "Quarterly Journal of Agriculture," in which appears Mr. Watson's paper on this oat; to whom the merit is due of bringing it into more prominent notice, and of directing the attention of cultivators to its valuable properties.

July 4, 1842.

The last Council of the Session was held at the Society's House in Hanover Square, on Wednesday, the 3rd August, present—Henry Handley, Esq., in the chair, Colonel Austen, Thomas Raymond Barker, Esq., French Burke, Esq., Sir Charles Burrell, Bart., M.P., Colonel Challoner, Charles Robert Colvile, Esq., M.P., Humphrey Gibbs, Esq., W. Fisher Hobbs, Esq., John Kinder, Esq., Hon. M. W. B. Nugent, George Kimberley, Esq., and Professor Sewell.

Colonel Challoner, having laid before the Council the report of the Finance Committee, which was confirmed, and the various cheques ordered to be drawn and transmitted to the winners of the prizes at the meeting at Bristol, proceeded to detail to the Council the amount of the receipts and expenditure connected with the recent country meeting, from which it appeared that at the gates of the show-yard alone the sum of 2,393*l.* had been received on that occasion. Colonel Challoner then read to the Council his draught of regulations for the general arrangements of the business at the meeting to be held next year at Derby.

Mr. Handley read to the Council the copy of the letter addressed by him, agreeably with their resolution of July 20, to the directors of the Great Western Railway, stating the nature of the complaints made by the exhibitors who had conveyed their stock by the railway to Bristol, and detailing specific instances in which their charges had been not only considerably higher than those of other railway companies, but beyond their own charges as fixed by themselves in the schedule of their circular. Mr. Handley further stated that he had not at that time received any reply to this communication from the directors of the Great Western Railway.

Mr. Fisher Hobbs, as a Member of the Deputation from the Society to the Meeting of the Royal Agricultura Improvement Society of Ireland, held at Cork, in the week after that of the meeting at Bristol, reported the very kind manner in which they had been entertained by the Marquis of Downshire, and the hospitable and friendly reception given to the Deputation by the Agricultural Society of Ireland. Mr. Hobbs stated that great spirit was displayed throughout the whole of the proceedings at Cork, and that the agriculturists of the Sister Kingdom were not only sensible of their being behind the farmers of this country in the art of cultivation and the systems of husbandry, but felt the strongest desire to enter into more immediate communication and friendly correspondence with the agriculturists of England.

The Rev. W. L. Rham, another member of the Deputation, has also borne his testimony to the excellence of the Meeting, and the friendly reception of the Deputation.

Mr. Gibbs reported the arrangements connected with the seed-wheat, and the future mode of printing the prizes in a separate form, so as not to impede the ordinary printing and distribution of the general catalogue.

Mr. Graburn addressed a letter to the Council, suggesting a plan of trial for agricultural implements.

Mr. Handley having called the attention of the Council to the subject of the responsibility attached to the charge of the stock on the day of auction, on the motion of Col. Challoner, seconded by Mr. Dean, it was resolved, That the Bristol Yard Committee should be requested to consider and report upon the best means of conducting the future business of the auction.

Meeting at Derby.

The Council unanimously agreed to the following appointment of the General Derby Committee:—

The Duke of Richmond, Chairman; Colonel Challoner, Vice-Chairman;

Earl Spencer; Hon. Captain Spencer; E. S. Chandos Pole, Esq.; C. R. Colvile, M.P.; J. V. Shelley, Esq.; T. Raymond Barker, Esq.; Colonel Austen; James Dean, Esq.; Philip Pusey, Esq., M.P.; William Miles, Esq., M.P.; J. W. Childers, Esq., M.P.; W. G. Hayter, Esq., M.P.; Humphrey Gibbs, Esq.; W. Shaw, Esq.; Sir John Johnstone, Bart., M.P.; W. Fisher Hobbs, Esq.

The Council resolved that the Duke of Richmond should be requested to name the date at which a Deputation of the Society would proceed to Derby for the purpose of inspecting the various localities submitted by the authorities for the consideration of the Society, and selecting such sites as may appear to be the most eligible for the respective purposes of the Meeting.

Mr. Colvile, M.P., Chairman of the Local Derby Committee, reported the following nomination of the Members of that Committee:—C. R. Colvile, Esq., M.P., Chairman; Sir Henry S. Wilmot, Bart.; Joseph Strutt, Esq.; E. S. Chandos Pole, Esq.

Official Arrangements.

On the motion of Mr. Dean, it was resolved, that the Council at its rising that day should terminate the session for the season, and adjourn over the recess to the first Wednesday in November, during which period the

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[*] With regard to the weight of this, it is understated. The potato-oats were sent to the mill, where they were weighed immediately upon being measured into sacks; whilst the Dyock oats remained in the sack, after being measured, more than three months before they were sent to the mill and weighed, the mouth of the sack being open the whole of the time, and the grain consequently exposed to mice and to loss in moving the sacks, &c. Unfortunately, I did not see it before it was sent; but, upon questioning the miller, he says the quantity was much below the alleged measure; and, according to his estimate, the grain would weigh 45lbs. per bushel. I am inclined to think this is about the truth; as my farm-servants, who were much prejudiced against "*the Scotch corn*," admitted its marked superiority of weight over the potato-oats, when they placed the sacks in the granary. As, however, I am fearful of advancing any fact in a case like this which cannot be verified, I have retained the lighter weight, though satisfied of its inaccuracy.

Secretary should be allowed a vacation of two months, Mr. Dean undertaking, at the request of the Council, to superintend the due execution of the various works determined upon by the House Committee, and required for the purpose of the Society.

On the motion also of Mr. Dean, the sum of £100 was voted for the purchase of books for the library under the control of the Journal Committee.

Mr. Hobbs gave notice that at the monthly Council in November he should move that there should be two additional clerks upon the regular establishment of the Society, in consequence of the rapid increase of business.

Mr. Dean undertook, at the request of the Council, to examine the conditions and bearings of the Draught of the Lease of the Society's House, submitted to the Council by Messrs. Bicknell and Son, the legal advisers respectively of the Society, and Sir George Talbot, and to report upon the same at the monthly Council in November.

COMMUNICATIONS.

Charles E. Deacon, Esq., Town-clerk of Southampton, transmitted on the part of the Corporation of Southampton, an invitation for the Society to hold its Meeting of 1844 within the precincts of that Borough; replies to the queries of the Society as to particular capabilities for the purposes of the Meeting, and the accommodation of the Members; the free grant of the use of their Guildhall and Audit House; and a general plan of the Town and its neighbourhood; for which the thanks of the Council were ordered, and the documents referred to their Meeting, at which the decision of the place of the Annual County Meeting of 1844 would be made.

Mr. Purchas transmitted memorials from the Chepstow and Monmouth Farmers' Clubs, on the subject of sending out accredited scientific lecturers; and presented a copy of the regulations and annual report of the Monmouth Farmer's Club.

Professor Sewell communicated his Report on the question of the white Belgian Carrots producing blindness when given as food to horses. This report was referred to the Journal Committee, and, in the Professor's opinion, there is not the least reason to believe that the Belgian carrot has greater tendency to produce blindness than an excess of any other diet.

Mr. Hobbs stated that it would be too late this year to apprize the competitors for seed wheat at the Meeting at Derby, that specimens of the plant in the state of straw, &c., as well as samples of the grain should be produced; and he therefore hoped that the condition which required such specimens of straw, &c. to be exhibited with the seed-wheat would not be rigidly enforced at that Meeting.

Mr. John Martin, R.A., the celebrated artist, transmitted to the Council the details of his plan for effectually preserving and distributing the sewerage of the metropolis, and for an improved system of drainage, which were reserved for consideration at a future Meeting. Mr. George Fennell presented specimens of transplanted wheat; Count de Gourcy, a copy of his Agricultural Tour through Great Britain; Mr. Cuthbert Johnson, a copy of his Cottage Farmer's Assistant; Mr. Eames, a copy of the Report of the Ashby-de-la-Zouch Agricultural Association; and the Agricultural Society of India, copies of their recent Report and Proceedings.

NEW MEMBERS.

The following gentlemen have been elected members of the Society during the month.

Alliston, John, 38, Russell Square, London
Clarke, J. G., Kennersley Castle, Herefordshire
Courtenay, Viscount, Powderham Castle, Exeter
Davis, S., Frampton, Dorchester, Dorset
Dean, Arthur Keball, 1, St. Alban's Place, Hammersmith
Dows, J. H., Mulster Greys, Essex
Drabwell, J., Thurcroft Hall, near Rotherham
Escott, Bickham, M.P., Hartrow, Taunton
Farhall, J., Sillington, near Petworth, Sussex
Festing, R. G., Bath
Garratt, John, Bishop's Court, near Exeter
Garratt, Francis, Ellacombe, near Torquay, Devon
Garland, J., Stoneleigh, Wimborne, Dorset
Gratree, T., Monmouth
Harwood, D., (Land Surveyor), Broad Street, Bristol
Heathcote, R., Bayterby, near Atherstone, Warwicksh.
Heywood, J.
Hopton, Rev. W., Bishop's Frome, near Bromyard
Hoskins, T., Haselbury, Plucknett, Somerset
Ingram, J. A., Codford St. Peter, Warminster, Wilts.
Johnson, A., Hatfield, near Chelmsford, Essex
Lewer, E., Wimborne, Dorset
Maclaine, Colonel Hector, Thornbury, Gloucestershire
Mammatt, J., Ashby-de-la-Zouch, Leicestershire
Paul, W., High Grove, Tetbury, Gloucestershire
Peachey, W., jun., Ebernoe, near Petworth, Sussex
Pope, J., Symondsbury, Bridport, Dorset
Prideaux, Sir E. S., Netherton, near Honiton
Samman, William, Middleton Park, near Bicester
Taylor, Robert, Stableford, near Wolverhampton
Tolly, T., Twyning, Tewkesbury, Gloucestershire
Trebeck, Thomas, Southwell, Notts
Tudor, T., Wysham, near Monmouth
Turner, J. T., Colebrooke, Crediton, Devon
Vowles, H., Park Farm, Bath
Welman, Charles Noel, Puddington Lodge, Crediton
Whalley, C. L., Lancaster
Whitaker, Joseph, Ramsdale House, Nottingham
Wingfield, J. M., Tickencote Hall, Rutland
Wood, Sir M., Bart., M.P., 24, Great George-street, Westminster
Wyld, J., Woodborough, near Pewsey, Wilts.

James Winter Scott, Esq., of Rotherfield Park, Hampshire, was elected a Governor.

The following Honorary Members have also been elected:—

Dr. Lyon Playfair
Professor Edward Solley
His Excellency the Hon. Henry Everett

HIGHLAND AND AGRICULTURAL SOCIETY'S GENERAL SHOW AT EDINBURGH.

TUESDAY, 2ND AUGUST.

AWARD OF PREMIUMS.

I.—CATTLE.

SHORT-HORN BREED.

Class I. For the best Bull, calved after 1st January, 1838. The Premium of 50 sovs., to No. 6, Mr. Thos. Crofton, of Holywell, county of Durham.

For the second-best do. The Premium of 30 sovs., to No. 15, Mr. John Hunt, Thornington, County of Northumberland.

The Honorary Silver Medal, to Sheldon Cradock, Esq., the *Breeder* of the best Bull in this class.

II. For the best Bull, calved after 1st January, 1841. The Premium of 20 sovs., to No. 9, John Millar, Esq., of Ballumbie, county of Forfar.

III. For the best Cow. The Premium of 15 sovs., to No. 2, His Grace the Duke of Buccleuch, county of Edinburgh.

For the second-best do. The Premium of 10 sovs. to No. 3, His Grace the Duke of Buccleuch, county of Edinburgh.

For the third-best do. The Premium of 5 sovs., to No. 1, His Grace the Duke of Buccleuch, county of Edinburgh.

IV. For the best Heifer, calved after 1st January, 1840. The Premium of 10 sovs., to No. 2, Mr. Thos. Crofton, of Holywell, county of Durham.

For the second-best ditto. The Premium of 7 sovs., to No. 5, John Millar, Esq., Ballumbie, county of Forfar.

For the third-best do. The Premium of 5 sovs., to No. 9, Mr. Wm. Tod, Elphinstone Tower, county of Haddington.

V. For the best Heifer, calved after 1st January, 1841. The Premium of 10 sovs., to No. 1, His Grace the Duke of Buccleuch, county of Edinburgh.

For the second-best do. The Premium of 7 sovs., to No. 9, Mr. Thomas Crofton, Holywell, county of Durham.

For the third-best do. The Premium of 5 sovs., to No. 5, Mr. Barclay Allardice, of Ury, county of Kincardine.

VI. For the best two Oxen, calved after 1st January, 1839. The Premium of 10 sovs., to No. 1, Mr. Rbt. Dudgeon, Humbie, county of Linlithgow.

For the second best two do. The Premium of 7 sovs., to No. 2, Mr. John Millar, Ballumbie, county of Forfar.

VII. For the best two oxen, calved after 1st Jan., 1840. The Premium of 10 sovs., to No. 1, Mr. John Brodie, Abbeymains, county of Haddington.

Ayrshire Breed.

VIII. For the best Bull, calved after 1st January, 1838. The premium of 20 sovs. to No. 6, Mr. James Horne, Newmill, county of Stirling.

For the second best ditto. The premium of 10 sovs. to No. 12, Mr. Robert Paton, Clober Hill, county of Dumbarton.

The Honorary Silver Medal, to Mr. John Coubrough, county of Renfrew, the breeder of the best Bull in this class.

IX. For the best Cow. The premium of 15 sovs. to No. 15, Mr. William Glasgow, Airdrie, county of Lanark.

For the second best do. The premium of 7 sovs. to No. 19, Mr. Graham of Limekins, county of Lanark.

For the third best ditto. The premium of 5 sovs. to No. 13, Mr. Gabriel Dunlop, Robertland, county of Ayr.

X. For the best three Cows. The premium of 10 sovs. to No. 2, Mr. Lawrence Drew, Carmyle, county of Lanark.

XI. For the best Heifer, calved after 1st January, 1840. The premium of 7 sovs. to No. 7, Mr. James Newbigging, Poniel, county of Lanark.

For the second best do. The premium of 5 sovs. to No. 2, Mr. Alexander Kerr, Gallowberry, county of Ayr.

XII. For the best two Oxen, calved after 1st January, 1838. The premium of 10 sovs. to No. 2, Mr. Thomas Sadler, Norton Mains, county of Edinburgh.

Fife Breed.

XIII. For the best Bull, calved after 1st January, 1838. The premium of 20 sovs. to No. 3, Mr. Robert Wilson, Firthfield, county of Fife.

The Honorary Silver Medal, to Mr. Robert Wilson, the breeder of the best Bull in this class.

XIV. For the best Cow. The premium of 15 sovs. to No. 5, Colonel Lindsay, Balcarres, county of Fife.

XV. For the best Heifer, calved after 1st January, 1840. The premium of 7 sovs. to No. 1, Mr. Robert E. Beveridge, Urquhart Farm, county of Fife.

XVI. For the best two Oxen, calved after 1st January, 1838. The premium of 10 sovs. to No. 2, Colonel Lindsay, of Balcarres, county of Fife.

West Highland Breed.

XVII. For the best two Oxen, calved after 1st January, 1838. The premium of 15 sovs. to No. 4, Mr. Wauchope, of Edmonstone, county of Edinburgh.

For the second best two do. The premium of 10 sovs. to No. 1, Sir Neil Menzies of Menzies, Bart., county of Perth.

XVIII. For the best two Oxen, calved after 1st January, 1839. The premium of 10 sovs. to No. 1, His Grace the Duke of Sutherland, county of Sutherland.

Galloway, Angus, and Aberdeen Polled Breeds.

XIX. For the best two Oxen, calved after 1st Jan., 1838. The Premium of 15 sovs., to No. 1, Sir John Hall, of Dunglass, Bart., county of Berwick.

For the second best two do. The Premium of 10 sovs. to No. 6, Mr. Hugh Watson, Keillor, county of Forfar.

For the third best two do. The Premium of 5 sovs., to No. 4, Mr. Alexander Craig, Kirkton, county of Sutherland.

XX. For the best two Oxen, calved after 1st Jan., 1839. The Premium of 15 sovs., to No. 1, His Grace the Duke of Richmond, county of Banff.

For the second best two do. The Premium of 10 sovs., to No. 4, Mr. James Mustard, county of Forfar.

Any Breed.

XXI. For the best two Oxen, pure or cross, calved after 1st January, 1838. The Premium of 15 sovs., to No. 2, Mr. Robert Walker, Ferrygate, county of Haddington.

XXII. To No. 1, his Grace the Duke of Buccleuch, county of Edinburgh, the owner of the five best Steers, calved after 1st January, 1841, which, in the opinion of the Judges, would best remunerate the feeder. 15 sovs.

XXIII. To No. 2, Mr. James Mowbray, of Cambus, county of Clackmannan, the owner of the five best Heifers, calved after 1st January, 1841, which, in the opinion of the Judges, would best remunerate the feeder. 15 sovs.

XXIV. For the best Dairy Cow. The Premium of 10 sovs., to No. 4, Mr. James Peattie, Knowhead, county of Stirling.

II. HORSES.

Class I. For the best Cart Stallion not exceeding ten years. The Premium of 50 sovs., to No. 15, Messrs. R. and T. Jackson, of Stanleymuir, county of Renfrew.

For the second best do. The Premium of 40 sovs., to No. 20, Mr. George Paton, Bankhead, county of Renfrew.

For the third best do. The Premium of 30 sovs., to No. 27, Mr. Hugh Wallace, Old Monkland, county of Lanark.

II. For the best Stallion for breeding Carriage Horses. The Premium of 50 sovs., to No. 3, Mr. Thos. Cossar, Dalkeith, county of Edinburgh.

III. For the best Mare for breeding Carriage Horses. The Premium of 15 sovs., to No. 1, the Earl of Hopetoun, county of Linlithgow.

For the second best do. The Premium of 10 sovs., to No. 3, Mr. Lewis Borthwick, county of Edinburgh.

IV. For the best Cart Mare. The Premium of 15 sovs., to No. 14, Mr. James Frame, Overton, county of Lanark.

For the second best do. The Premium of 10*l.*, to No. 15, Mr. John Gibson, Woolmet, county of Edinburgh.

V. For the best entire Colt for Agricultural Purposes, foaled after 1st of January, 1839. The Premium of 20*l.*, to No. 2, Mr. Samuel Clark, Manswraes, county of Renfrew.

VI. For the best do. for do., foaled after 1st January, 1840. The Premium of 10*l.*, to No. 1, Mr. Andrew Aitken, Carnbee, county of Fife.

VII. For the best Filly for do., foaled after 1st Jan., 1839. The Premium of 5*l.*, to No. 8, Mr. John Craig, Burnbrae, county of Lanark.

VIII. For the best do., foaled after 1st Jan., 1840. The Premium of 5*l.*, to No. 14, Mr. James Newbigging, Poniel, county of Lanark.

IX. For the best Colt or Filly, foaled after 1st Jan., 1841. The Premium of 5*l.*, to No. 13, Mr. Christopher Veitch, jun., Park, county of Linlithgow.

III. SHEEP.

Leicester Breed.

Class I.—For the best Tup. The Premium of 20*l.*, to No. 12, Mr. James Erskine, Melrose, county of Roxburgh.

For the second best do. The Premium of 15*l.*, to No. 21, Mr. Wm. Mylne, Bolton, county of Haddington.

For the third best do. The Premium of 10*l.*, to No. 11, Mr. James Burnet, Aberlady, county of Haddington.

II. For the best Shearling Tup. The Premium of 20*l.*, to No. 8, Mr. John Brodie, Abbeymains, county of Haddington.

For the second best do. The Premium of 15*l.*, to No. 7, Mr. John Brodie, Abbeymains, county of Haddington.

For the third best do. The Premium of 10*l.*, to No. 18, Mr. Robert Walker, Ferrygate, county of Haddington.

III. For the best pen of five Ewes. The Premium of 10*l.*, to No. 2, Mr. George Brown, Halls, county of Haddington.

For the second best do. The Premium of 5*l.*, to No. 10, Mr. Andrew Thompson, Highridge Hall, county of Roxburgh.

IV. For the best pen of five Gimmers. The Premium of 10*l.*, to No. 3, Mr. George Brown, Halls, county of Haddington.

For the second best do. The Premium of 5*l.*, to No. 6, Mr. George Reid, Ballencreiff, county of Haddington.

V. For the best pen of five Dinmonts. The Premium of 5*l.* was not awarded in this class.

Cheviot Breed.

VI. For the best Tup. The Premium of 15*l.*, to No. 12, Mr. Alexander Craig, Bighouse, county of Sutherland.

For the second best do. The Premium of 10*l.*, to No. 6, Mr. William Aitchison, Menzion, county of Peebles.

For the third best do. The Premium of 5*l.*, to No. 14, Mr. Thomas Elliot, Hindhope, county of Roxburgh.

VII. For the best Shearling Tup. The Premium of 10*l.*, to No. 12, Mr. William Riddell, Cappuck, county of Roxburgh.

For the second best do. The Premium of 5*l.*, to No. 4, Mr. Alexander Craig, Bighouse, county of Sutherland.

VIII. For the best pen of five Ewes. The Premium of 10*l.*, to No. 1, Mr. William Aitchison, Menzion, county of Peebles.

For the second best do. The Premium of 5*l.*, to No. 3, Mr. James Brydon, Moodlaw, county of Dumfries.

IX. For the best pen of five Gimmers. The Premium of 10*l.*, to No. 4, Mr. Alexander Craig, Bighouse, county of Sutherland.

For the second best do. The Premium of 5*l.*, to No. 1, Mr. William Aitchison, Menzion, county of Peebles.

X. For the best five fat Wethers, lambed in 1839. The Premium of 5*l.*, to No. 1, Mr. Alexander Craig, Bighouse, County of Sutherland.

Black-faced Breed.

XI. For the best Tup. The Premium of 10*l.*, to No. 4, Mr. James Deans, Mitchelhill, county of Peebles.

For the second best do. The Premium of 5*l.*, to No. 8, Mr. Robert M'Turk, of Hastings-hall, county of Dumfries.

XII. For the best pen of ten Ewes. The Premium of 5*l.*, to No. 2, Mr. Alexander Murray, Dean's Houses, county of Peebles.

XIII. For the best five fat Wethers, lambed in 1838. The Premium of 5*l.*, to No. 4, Mr. James A. Vernor, Hillhead, county of Edinburgh.

XIV. For the best five do., lambed in 1839. The Premium of 5*l.*, to No. 3, Mr. Archibald White, Braedownie, county of Forfar.

Southdown Breed.

XV. For the best Tup. The Premium of 15*l.*, to No. 4., Mr. Hugh Watson, Keillor, county of Forfar.

XVI. For the best pen of five Ewes. The Premium of 5*l.*, to No. 1, his Grace the Duke of Richmond, county of Banff.

Crosses.

XVII. For the best pen of five Dinmonts, cross between Leicester Tup and Cheviot Ewe. The Premium of 5 sovs., to No. 2, Mr. Robert Waugh, Eweford, county of Haddington.

XVIII. For the best five Dinmonts, cross between Leicester Tup and Black-faced Ewe. The Premium of 5 sovs., No. 1, to Mr. John Finnie, Swanston, county of Edinburgh.

XIX. For the best pen of five wethers, of any cross, not exceeding four years old. The Premium of 5 sovs. to No. 1, Mr. James Aitchison, of Alderston, county of Haddington.

IV. SWINE.

Class I. For the best Boar. The Premium of 7 sovs., to No. 8, Mr. William Henderson, New Mills, county of Clackmannan.

For the second best do. The Premium of 5 sovs., to No. 13, Mr. Alexander Scott, Craiglockhart, county of Edinburgh.

II. For the best Sow. The Premium of 5 sovs., to No. 7, Mr. John Hunter, Beith, county of Ayr.

For the second best do. The Premium of 4 sovs., to No. 6, Mr. Alexander Gillespie, Colinton Mill, county of Edinburgh.

V. DAIRY PRODUCE.

1. Curing Butter.

Class I. To the owner of any Dairy in Scotland who had made and cured, and exhibited at the Show, the best quality of Butter for the market—the quantity made and cured not being less than two cwt. during the season 1842. The Premium of 5 sovs., to No. 14, Mr. George Sanderson, Orchardfield, county of Edinburgh.

For the second best quality. The Premium of 3 sovs., to No. 2, Lord Lynedock, county of Perth.

2. Making Cheese.

Class II. To the Person in Scotland who produced the best specimen of Sweet or Full Milk Cheese, made of any variety that he shall find most profitable for the market, the quantity not being less than one cwt. of 112lbs., 16 oz. to the lb. The Premium of 5 sovs., to No. 4, Mr. John Brock, Barns of Clyde, county of Dumbarton.

For the second best quality. The Premium of 3 sovs., to No. 7, Mr. John Johnston, Newton, county of Dumfries.

III. To the owner of any Dairy in Scotland who has made and exhibited for sale the best quality of Cheese from Skimmed Milk, not being less than one cwt. during the season 1842. The Premium of 3 sovs., to No. 4, Mr. David Somerville, Strawfrank, county of Lanark (by mistake omitted in the printed list).

For the second best quality of do. The Premium of 2 sovs., to No. 3, Mr. John Somerville, Lampits, county of Lanark.

EXTRA STOCK.

The Judges on extra Stock have to report as follows :—First in the class of Cattle, they recommend for a Premium a six-year-old Ayrshire Bull, belonging to Mr. Thomas Stark, Mains Farm, Campsie, near Stirling. They also consider of great merit the following :—Three shorthorn Cows, exhibited by the Duke of Buccleuch ; a three-year-old shorthorned Ox, exhibited by Mr. Tyndall Bruce, of Falkland ; two two-year-old Steers, a cross between the shorthorned Bull and West Highland Cows, exhibited by Mr. Dudgeon, of Humbie ; a four-year-old West Highland Ox, exhited by Neil Malcolm, Esq., of Potallock ; two five-year-old Oxen of the West Highland breed, exhibited by Mr. Trotter, of Mortonhall.

For the class of Sheep they commend, five two-year-old Leicester Wethers, exhibited by the Earl of Wemyss; five three-year-old Cheviot Wethers, exhibited by Mr. Craig, of Bighouse; five three-year-Leicester Ewes, exhibited by Mr. Brown, of Halls; three Ewes of the Leicester breed, two nine and one eleven years old, exhibited by Mr. Hislop; one thirteen-year-old Ewe, with her twenty-first Lamb, exhibited by Mr. Brown, of Halls.

For the class of Horses, they commend an Arab Stallion, Alexander the Great, seven years old, exhibited by C. M. Barstow, Esq., apparently a well-bred Arab; Inheritor, exhibited by W. R. Ramsay, Esq., M.P.; the Little Known, exhibited by D. Robertson, Esq., of Ladykirk.

VI. WOOL.

Leicester Wool.—Class I. Shearling Leicester Tup fleece, weight 8lb. 4oz., showing quality, weight, and management. The first Premium of 5 sovs. was awarded to General Lord Lynedock.

Shearling Leicester Tup Fleece, weight 6lb. 13oz., showing quality, weight, and management. The second premium of the silver medal was awarded to Colonel Miller of Urquhart, Fifeshire.

II. Shearling Leicester Ewe Fleece, weight 5lb. 7oz., showing quality, weight, and management. The first premium of 5*l.* was awarded to Lord Lynedoch.

Shearling Leicester Ewe Fleece, weight 5lb. 8½oz., showing quality, weight, and management. The second premium of the Silver Medal was awarded to Mr. Geo. Brown, Halls, Dunbar.

III. Shearling Leicester Tup Fleece, weight 8lb. 9oz., having merit as to washing and winding. The first premium of 3*l.* was awarded to Mr. Geo. Brown, Halls, Dunbar.

Shearling Leicester Tup Fleece, weight 8lbs. 11½oz., having merit as to washing and winding. The second premium of the Silver Medal was awarded to the Duke of Buccleuch.

IV. Shearling Leicester Tup Fleece, weight 6lb. 10¼oz., having merit on the score of washing alone. The first premium of 2*l.* was awarded to Mr. John Brodie, Abbeymains, near Haddington.

Cheviot Wool.—Shearling Cheviot Tup Fleece, weight 6lb. ¼oz., salved with grease only. The premium of 5*l.* was awarded to Mr. Thomas Anderson, Sandhope, Selkirkshire.

Shearling Cheviot Ewe Fleece, weight 3lb. 12¾oz., salved with grease only. The silver medal was awarded to Mr. Thos. Elliott, Hindhope, Roxburghshire.

Cross-bred Wool.—Fleece of a Cross between the Leicester Tup and Shetland Ewe, weight 5lb. 3oz., and which the Judges highly commended for quality and management. A premium of 5*l* was awarded to Mr. Aitchison, Borlands, parish of Newlands, Peebles-shire.

Fleece of a Cross between the Southdown Tup and Shetland Ewe, weight 4lb. 4oz. A premium of 3*l.* was awarded to Mr. Aitchison, Borlands, parish of Newlands, Peebles-shire.

Cotswold Wool.—Cotswold Fleece, weight 15lb. 3oz., presented by the Hon. Alexander Leslie Melville, of Branston Hall, near Lincoln. This fleece was clipped from one of a pen of Twenty Sheep which gained the first prize at the Lincoln Fair, in April 1842, and which were bred by Mr. Battersby, of Scothorn, near Lincoln.

The Hon. Mr. Melville also presented a Fleece, lighter and finer, from a yearling Leicester sheep, bred by Mr. Chas. Tonge, of Branston, near Lincoln.

There were exhibited several Fleeces by Mr. Robert Boyd, Innerleithen, showing the results of a new salve.

The following are the names of the judges who were appointed to award the prizes to the different competitors:—

Short-horn Breed.—Mr. Wood, of Kimbleworth, Durham; Mr. Bartholomew, Goltho, Lincolnshire; and Mr. Skipwarth, of Aylesby, Lincolnshire.

Ayrshire Breed.—Mr. Finley, Lyonston, Stirling; Mr. A. Carmichael, Raplock; Mr. Glen, of Hawkhead; and Mr. M'Ilraith, Auchenflower, Ayrshire.

Fife, Galloway, and Angus Polled Breed.—Mr. Crawford, of Balbougie, Fifeshire; Mr. Carmichael; and Mr. M'Ilraith.

West Highland Breed.—Mr. Proctor, of Halkerston, Forfarshire; Mr. Lorne Campbell, of Roseneath; Mr. Carmichael.

Any Breed.—Mr. Proctor; Mr. Glen; Mr. Finlay; Mr. Watson, of Keillor, Forfarshire; and Mr. Lorne Campbell.

Horses.—Mr. Wm. Gillespie, Gateside, Douglas; Mr. Hunt, of Thornington; and Sir John Hope, of Pinkie.

Sheep.—Leicester Breed.—Mr. Buckley, of Normanton Hall, Leicestershire; Mr. Gray, of Dilston; Mr. Watson, of Keillor.

Cheviot Breed.—Mr. Robson, of East Keillor; Mr. Welsh, Earlshaugh, Moffat; and Mr. Murray, Droch-hill, Peebles-shire.

Black-faced Breed.—Mr. Lorne Campbell; Mr. Carmichael; and Mr. Gillespie.

Southdown Breed.—Mr. Jonas Webb, of Babraham, Cambridgeshire; and Mr. Wood, of Kimbleworth.

Cross Breed.—Mr. Bartholomew; Mr. Wood; Mr. Watson; and Mr. Webb.

Swine.—Mr. Grey; and Mr. Whyte, Glenorchy.

Dairy Produce.—Mr. Dixon, Edinburgh; Mr. Richardson, do.; Mr. Smith, Leith; and Mr. M'Nair, do.

Wool.—Mr. Archibald, Alloa; Mr. Pringle, Haddington; and Mr. Patterson, Dalkeith.

Implements.—Professor Lowe; Sir John Robison; Sir J. G. Dalyell; Mr. Hunter, of Thurston; and Mr. R. Hunter; Mr. Smith, of Deanston; Mr. White, of Gleneshin; assisted in certain departments by Mr. Hugh Morton, and Mr. Slight, as these two last were themselves exhibitors.

Roots and Seeds.—Professor Graham and Dr. Neill.

THE FARMER.

No. IX.

On Sowing Wheat.

Much valuable time is occupied in preparing ground for wheat, and in many instances the work is so badly done, and consequently the crops so light as not to repay the outlay. It is much to be regretted that so little attention is paid to the state of the soil preparatory to sowing corn in general, and particularly wheat; for wheat being sown in the autumn, has to endure all the inclemency of the winter weather—often saturated with a long continuance of wet, and at other times hard frost, with a bleak cutting wind that baffles all the farmer's care, and disappoints his most sanguine hopes.

Having selected your ground, the first object of your attention must be to lay it out in such form that no excess of moisture may remain on the surface. All wet soils should be thoroughly drained according to the hints and directions given in numbers V. and VI., the months May and June. Unless your soil is dry, the expense and trouble of lime, manure, and labour will be useless, for the wet will counteract their effects by injuring the seed, and in case of frosty weather, the frost will obtain a firmer hold of the soil, which from its retaining the cold round the roots of the young plants, retards the growth until late in the spring, and consequently the harvest is later; but if your soil is dry, the frost acts but slightly thereon, and upon a change of weather the young wheat soon recovers its vigorous vegetation.

Presuming your ground to be properly prepared with a due portion of lime and manure, all your drains in proper order, your fences secure, and your ditches scoured and cleaned, the next process is to sow the seed, which is done by broad-cast, drilling, or dibbling. In sowing broad-cast, which is the common practice of the country, a great quantity of seed is consumed, and much of that goes to waste near the endlands, and by remaining on the face of the ground uncovered, is picked up by the crows and other birds; although we would not wish to deprive the poor birds of their due portion of food, something less expensive than wheat might answer their purpose. Sowing wheat in lines or drills by a machine is an excellent way to save seed, about half the quantity used in broad-cast being required for the drill; but to do the work effectually, the ground must be well harrowed so as to be rendered fine and even; the better the ground is prepared the less waste of seed, and the cleaner the crop; but as the drill machines are too expensive for small farmers in general, dibbling may be resorted to instead.

Dibbling is not a new invention, it has been practised for many years, and has all the advantages of drill sowing, and at much less expense. When the ground is prepared as before stated, fine, even, and level, commence dibbling in the following manner. First, prepare two or more dibbling stocks, one for each workman; which are easily made of a slight piece of board about eighteen inches or two feet long and two or three inches wide, into which on one side fix five or six round pegs (see Fig. 1), each about two inches long and about an inch thick, and fix a handle on the other side (see Fig. 2) for the workman to take hold of in making the holes in the ground. By putting the end peg in the last hole, the workman will regulate his distance, and be making four or five holes at once; into each of the holes one or two grains should be dropped, which can be done by children; the field must then be harrowed with a very light harrow, or rolled with a light roller, to close the holes. The farmer will save more seed by dibbling than will defray the expense of paying the children for their labour, his field will be more regularly sown, the birds prevented from picking the grain, his corn free from weeds, and a certain expectation of a good crop.

Fig. 1.

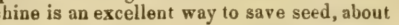
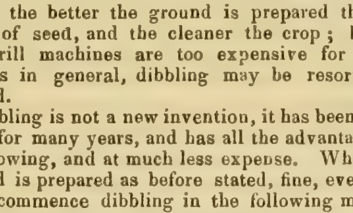


Fig. 2.



There is another advantage attendant upon dibbling that deserves consideration, which is, finding employment for poor children, who are too often brought up in idleness for want of employ. Dibbling may seem at first rather a tedious process, but from the practice of good ploughing the work will soon be done in strait lines. And if premiums were offered by some of the agricultural societies for the best and straitest sown crops of wheat, emulation for the prizes would act as a stimulus to good husbandry. Small premiums might also be offered for the greatest quantity of land properly dibbled, in the least portion of time, by a single person, as a reward for active industry.

The practice of dibbling would induce the farmer to pay greater attention to the hedges and ditches, and promote the habit of always keeping them in good order.

In proof of the utility of dibbling, and the great benefit accruing to *small* farmers from persevering in the plan, I would call their attention to a careful perusal of an article on the subject that appeared in the *Farmer's Magazine* for last March, page 176. Mr. Bartlett, the writer, brings practical experience in proof of his recommendation, and the successful result of his perseverance; and I would wish that all small farmers might try for themselves, feeling confident it would tend to their benefit, and the benefit of the poor labourers.

Your's, &c.

August, 1842. DELTA.

RUGELEY FARMER'S CLUB.

MR. WYLEY ON THE BEST METHOD OF KEEPING CART HORSES.

In proposing the subject for discussion this evening, I regret that some one more competent than myself has not undertaken it. It is generally admitted that amongst the heaviest items on a farm may be reckoned the keep of cart horses, and more particularly their winter keep. I can from my own experience give but a very few practical remarks, and I have therefore taken extracts from the works of several practical men, and also from a work in our library, viz., "British Husbandry," published under the care of the Society for the Diffusion of Useful Knowledge. The author says, "the feeding of farm horses forms so material a part of the charges of agriculture, that the manner in which they can be cheapest maintained is a matter deserving the most serious consideration. Hay, oats, or beans were long considered as the only provender, possessing the required degree of nutriment; and in consequence of the cost of these articles, penurious farmers stinted their horses, or those who were of an opposite disposition, and fond of fine teams, were put to great expense. Experience has, however, proved that substitutes may be used to a great extent without injury to the animal itself, or diminution of strength." Again the author remarks, regarding horse teams—"It is a just observation that one can hardly be at a loss to determine the character of a farmer from the condition of his horses: very fine high-fed cattle exhibiting the appearance of being prepared for sale, suggest the idea of idleness rather than of labour; but on the contrary, lean, spiritless creatures, worn out by toil and hunger, are certain indications of a bad farmer—one not thriving, and who does not deserve to thrive."

On our own farm we have found a very great saving from cutting the hay, and never allowing the horses to have hay in the racks, and also by using a small quantity of linseed; this plan we have pursued for the last five years, and we find it keeps our horses in good working condition. We allow to each horse 40lbs. grain, 3s. 4d., 1½ cwt. hay, 4s. 6d., 3 pints linseed, 1s., amounting to 8s. 10d. per week, to which must be added 6d. for cutting the hay, making 9s. 4d. per week. I find in the calculations that I have referred to, that horses cannot be kept in good working condition equal to plough an acre every working day for a less cost than from 9s. to 11s. per week, except when they are fed entirely on potatoes, or on gorse, and I have some doubt if they can be kept in condition on potatoes alone.

The late Mr. Curwen seems to have tried more experiments than most men with his farm and colliery horses. After several years' experience he gave a decided preference to the following plan.

	s.	d.
21lbs. potatoes, at 3d. per 14lbs.....	0	4½
7lbs. cut straw 1d., and cutting 1d., steaming 0½d.	0	2½
7lbs. long straw 1d., 6lbs. oats 8d. ..	0	9
Per day	1	4

or 9s. 4d. per week.

It is related by Vancouver and Arthur Young in the Survey of Essex, that working horses have been kept entirely through the winter on steamed potatoes, to every 30lbs. of which was added half a pint of salt. The difference of expense in a team of five horses during half a year, calculating potatoes at 40s. per ton, hay 3*l.* 15s. per ton, oats 24s. per quarter, will stand thus—

POTATOES.	£	s.	d.
5 horses 26 weeks, or 182 days, 50lbs. potatoes each per day, 18 tons at 40s.	36	0	0
Washing and stewing at 2d. per 100lbs.	3	15	0
Sulphur and salt....................	0	8	6
	£40	3	6
5s. 10d. per horse per week.			
HAY AND OATS.			
5 horses 182 days, 26lbs. hay per day, or 9 tons 5 cwt., at 70s..............	32	10	0
2 bushels oats each per week, 32½ qrs., at 24s.	39	0	0
	£71	10	0
11s. per horse per week.			

If horses can be maintained in working condition the saving with feeding them with potatoes will be about 6*l.* each horse. But I must confess that I am of a contrary opinion; and I am borne out by the author of "British Husbandry," who says—"this mode of feeding cannot be commenced before November, nor continued after February; for, notwithstanding the assertion of the reporters, as well as many other persons of veracity, respecting the common labour of a farm during the depth of winter, it cannot be continued during the spring without an unusual number of horses, or an allowance of corn upon land that is properly cultivated."

Carrots and Swede turnips are found to be very good substitutes for corn and hay; and I understand in some parts of Suffolk and Surrey the horses are fed almost entirely on the former, getting only a very small allowance of hay. I have found that horses are very fond of the Swede turnip, and I think a few pounds per day may be allowed, and less hay given in the spring of the year, and will be found to be very beneficial to the health and condition of the horses.

In Roberts's "Hints on Agricultural Economy," gorse is recommended to be given to horses ground or cut, and they will be found fully as equal to go through their work, and in as good condition as when fed on the very best hay. Gorse is a heating food, and horses when over fed with it are apt to become affected with a difficulty in staling, salt should therefore be mixed with their food when the greater portion of it consists of gorse; cut straw, turnips, carrots, and steamed potatoes, form an excellent combination when mixed with gorse as food for horses.

From an account published by Mr. Tytler, of Balmain, in the 5th vol. of the "Transactions of the Highland Society," it appears that he had during five years fed his farm horses, from the first of November to the middle of March, on gorse, with only a very small allowance of oats during part of the time. At first oats were given during the winter, but afterwards only from first of February, and then only at the rate of about one-third of a peck of average quality to each; the daily allowance of gorse from first of November to February being 28 lbs., and afterwards 18 lbs. with 14lbs. straw. Mr. Tytler reckons the expense during the first three months at 4¾d. per horse per day, and from February at 8d. each horse. Mr. Tytler says they not only kept but improved their condition during the season, but began to show a distaste for gorse at the commencement of spring.

Lewis, in his observations on an experimental farm, says, "we deem it beyond the possibility of dispute, that in general much negligence prevails in the feeding of farm horses. The common practice is to give them straw, hay, and grain, without any previous preparation. The consequence is that after the labours of the day, almost the whole of the horse's time is occupied in masticating the quantity of food necessary for his support. This, especially in the case of the horse, is a matter of peculiar hardship. Besides, there is always a considerable waste of food, both of hay and grain, when administered in this way, and consequently a direct loss to the owners. Practical men do not require to be told that when hay or straw is supplied in the regular manner, from 25 to 30 per cent. is wasted.

"The animal, therefore, derives no benefit from the wasted portion, although its intrinsic value remains undiminished; and in the case of grain, that portion only which is crushed in mastication affords him nourishment, but a great portion of it passes through the stomach without being masticated at all, and on this the digestive organs exert no action whatever. Many, indeed, suppose that nutriment has been extracted from the grain, but this is a mistake, for it has been established by direct experiment, that the germinating properties of the grain are not in the least affected by it."

Lewis also remarks, it is of considerable importance to ascertain the comparative merits of soft or mashed, and hard and dry feeding, especially when steamed roots, &c., are included under the former description of food. In connection with this subject, we may be permitted to observe that for the last seven years all our farm horses, consisting of from ten to twelve, have been fed entirely on a mixture of steamed potatoes and turnips, without oats or anything else; their fodder being sometimes hay, but more frequently straw given in the ordinary way. Each horse receives a mash of the above mixture three times a day, and although hay was occasionally given, yet, were 14 or 15lbs. cut straw added to the mixture, we are satisfied hay might be entirely dispensed with. We confess that we at first entertained some fears that so great a change of food might have a tendency to engender disease, but in this we were agreeably disappointed. The horses improved in condition, their skins were uniformly sleek and kindly, they also proved themselves more capable of undergoing fatigue and severe labour, all which were satisfactory proofs that the food given to them was congenial to their constitution; but, in order to prevent any tendency to disease, 6oz. of salt should be given to each horse per day. This plan, says Lewis, we followed, and the whole of our horses were never less affected with disease; and what at first originated from motives of economy, has thus continued to be adhered to as the best and healthiest mode of keeping farm horses we have hitherto met with. From my own experience, I am not able to contribute much information on the advantages of steaming food for horses, having only adopted the method very lately, and never having used potatoes. I find that very inferior hay is eaten readily after it has been steamed, and it regains some of the smell and flavour it has lost, which, if given to horses without steaming, would be wasted, and not be fit food for them.

There are several very good practical remarks in the *Farmer's Magazine* for December 1838, page 405, extracts from Roberts's *Agricultural Economy*, as to the quantity of food a horse will require during twenty-four hours; and also on the relative value of hay and oats at the market price. Thus 20lbs. of hay at 3*l.* per ton, will cost 6¼d.; and 20lbs. of oats at 22s. per qr., will be 1s. 3d. There is also another useful table, showing that a bushel of grain weighing 42lbs., will produce 25lbs. 2oz. meal and 16lbs. 14oz. husks; and a bushel weighing 30lbs. will only produce 16lbs. 1oz. meal and 13lbs. 15oz. husks. This clearly proves that the best and heaviest corn is the cheapest to use for horses, and that husks are cheaper to buy as husks than as poor corn. Another remark I request you to notice (page 406). He says, generally speaking, corn is much cheaper for horses than hay, independent of the extra work they will be equal to by being corn fed. Many may be surprised at this statement, but its correctness is easily proved. Every one that knows anything of the nature of fodder, and has been accustomed to attend to the feeding of horses, must admit that by weight hay does not contain of nutritive matter more than as one part to three of oats; thus 1lb. of oats contains fully as much real nutriment for the horse as 3lbs. of hay; without taking into consideration the superior condition and capability of a horse fed with corn. Thus 30lbs. of hay every day at 4*l.* per ton will amount to 19*l.* 18s. per year, whilst 10lbs. of oats every twenty-four hours at 24s. per qr. will amount to 13*l.* 13s. each horse per year; but supposing a horse to have 10lbs. of oats per day, it will require some other substitute, such as chaff or cut straw, to increase its bulk to 30lbs. per day, before the functions of digestion can be carried on, but the value of this will be amply repaid by the extra work the horse is able to perform.

I find, from all the observations that I have made, that 30lbs. to 35lbs. of food per day is the average quantity that a farm horse requires to keep him in good working condition: the cavalry allowance is 12lbs. of hay and 10lbs. of oats, making 22lbs.; post horses are usually allowed from 22lbs. to 26lbs. of food each day. It has been proved by Mr. Brotherton, of Rainhill, near Liverpool, and others, that horses cannot be kept in working condition on *corn entirely*. It is related by Sir John Sinclair, that from the year 1802 to the year 1811, Mr. Brotherton had been in the habit of allowing eight horses every twenty-four hours three Winchester bushels of oats and one bushel of beans, but no hay or chaff. During that period he annually lost a great number of horses, varying from fourteen to seventeen on an average, which he attributes to his having given them too much corn, more than the stomach could digest. This led him to allow a small portion of hay, and he afterwards adopted the following plan:—To every eight horses he allows one bushel of oats, one bushel of beans, and three bushels of cut hay, and straw or clover, the expense of which he thus estimates:—One bushel of beans 12s., one bushel of oats 7s., three bushels of hay or straw 2s., or 21s. per day for eight horses, or 17s.6d. per week each horse, besides 5s. worth of hay per week, making the total expense of each horse 22s.6d. A considerable saving thus arises compared to feeding entirely with grain; and he states his horses are now as able to do their work as ever he knew them, and he has only lost one horse since he adopted the new plan. If he had fed his horses on the former plan at the price corn now makes, it would have cost him at least 36s. 2d. per week, instead of 22s. 6d. under the new plan, making a difference of 13s. 8d. per week on each horse, or 35*l.* 10s. 8d. per annum. When Sir John wrote the work to which I am referring, grain appears to have made double the price it does at the present time.

Sir John also says, the article that, when the crop is abundant, can be best spared from human consumption, is the potato, which when steamed is an excellent food. 42lbs. of potatoes steamed with chaff will serve a horse twenty-four hours. And at any rate a feed of potatoes, if given to a horse, will not only diminish the expense of his maintenance, but is also conducive to his health.

I have been disappointed in obtaining from Mr. Bright, of Tiddesley, the method that he pursues in feeding farm horses. When I saw them in October, I thought them in better condition than any horses I had ever seen. Mr. Bright informed me he gave them some steamed potatoes, and very little hay, for he found it the most expensive food that could be used.

Sir John Sinclair states that in the year 1812, the expenses of cart horses were calculated at 11s. per week, or 28*l.* 12s. per year: again at 39*l.* 0s. 7d., at 42*l.* 10s. 10d., at 35*l.* 0s. 10d., at 27*l.* 16s. 10d., and at 34*l.* 12s. According to these items the expense of a cart horse in the best cultivated districts of Scotland, averaged 13s. 3d. per week. Supposing grain to be reduced in value one-third from the prices then calculated, the expense at the present time will be about 9s. per week. The following method, given in British Husbandry, costs 8s. 11¼d. per week:—10lbs. of grain per day 9d.—5s. 3d., ¾ cwt. of hay per week 2s. 5¼d., and 1¼ cwt. of cut straw 1s. 3d. Mr. Curwen's method, with a portion of potatoes, costs 9s. 4d. per week. The Essex method, without potatoes, 11s. The Essex plan with potatoes alone, 5s. 10d. My own plan 9s. 4d. per week. Mr. Tytler's, of Balmain, with gorse alone, 3s. 1½d. per week, and with gorse and corn 4s. 8d. per week.

I hope I have proved that the statement I made in the commencement of this paper is correct, that farm horses cannot be kept at a less cost than from 9s. to 11s. per week during the winter season, under the usual systems in this part of the county.

SUBSTANCE OF MR. TURNER'S REMARKS ON THE BEST MODE OF UNDER-DRAINING STIFF CLAY LANDS.

Although I fully concur in all that has been advanced, as to the great importance of under-draining, considering it the first step towards the improvement of this description of land, I cannot agree in the mode by which it is proposed to accomplish it, viz., by *cross drains*.

Having long had the management of considerable estates in this county, a large proportion of which consists of *inferior clay soils*, it has been a great object with me to give every reasonable encouragement to under-draining, by granting a liberal supply of soughing tiles to the tenantry, taking every precaution that they should be judiciously used. The system which I adopted, for many years, was that of *cross draining* the land, and I have seldom had cause to complain of the manner in which the work was executed, but in the course of time, I began to perceive, that this system of *under-draining strong clay lands*, did not effect *all the improvement* that ought to result from *so considerable an outlay*; I therefore came to the resolution to alter the mode, and to make trial of *furrow drains*, up the fall of the land, from *24 to 30 inches deep*, making the butts *about 5½ yards wide*, being the size best suited to land of that description, which possesses but little soil.

It being evident that the number of tiles required to furrow drain a fenced field of *one acre*, will not bear an exact relative proportion to the number it will take for a fenced field of *two or more acres*, I have prepared a calculation, from a plan correctly laid down, by which it appears that the number of tiles required for furrow drains, *at 5½ yards apart*, for one acre, and from *one to five acres*, (assuming, for example, the piece of land to be a regular parallelogram, 220 yards long, and 22 yards wide,) would, be nearly as follows:—

	Sewing Tiles.
For one acre 3 furrow drains, each 220 yards long (allowing 3 tiles to a yard,)	1,980
For two acres 7 furrow drains........	4,620
For three acres 11 do.	7,260
For four acres 15 do.	99,00
For five acres 19 do.	12,540

When the fall of the land happens to be *lengthwise* of a field, (as it is taken in the above calculation,) it will be found that *fewer tiles* will be required than when the fall renders it necessary to make the furrow drains *crosswise*.

If for instance, in the example given above, the furrow drains had to be made *crosswise* of the field, the number of tiles required would be,

	Soughing Tiles
For one acre 7 furrow drains........	2,310
For two acres 15 do.	4,950
For three acres 23 do.	7,590
For four acres 31 do.	10,230
For five acres 39 do.	12,870

Consequently it takes about 330 soughing tiles *more per acre*, to underdrain a field, of that form, when the fall of the land requires it to be done *crosswise*. A fenced field, which contains one acre, being an *exact square*, will take about 2,293 soughing tiles.

I mention these details to enable any member to estimate the expense of under-draining, according to the plan I recommend, which of course will vary, according to the *price of tiles* and the *rate of labour* in the district where he resides. *By ploughing out a furrow* in the proposed line of drain, a saving would be effected in price of labour.

I now beg leave to offer a few suggestions, which have occurred to me, in the superintendence of under-draining.

I think it a great evil to leave the drains open for a long time before the tiles are put in, as rain or snow may interrupt the work and damage the drain; *each day's work*, if possible, should be finished *each day*.

I strongly urge the *use of soles* to the *tiles*; for *in all cases* the stiffest clay will be softened, in the course of time, by the *action of water*, and the tiles, although made with feet, will sink from the pressure of the superincumbent soil and the trampling of horses. I recently saw an instance of this kind, in making an open drain to divide a field; it cut through a sough which had been carefully made some years ago: the tiles were laid upon the stiffest clay I ever met with, and yet *they had sunk*, and the clay had risen near an inch, within *the tile*; had soles or broken tile pieces been used, this would not have happened.

Another evil to which I wish to advert, is the practice, which not unfrequently prevails, of *putting back the clay* into the *drains*, after laying the tiles; whenever *that is done*, the drain is rendered *comparatively useless*. It is very important to cover the tiles with *brushwood* or *heath*, if it can be obtained, and to fill up the drain with such materials only as will allow the water to escape without difficulty.

From the experiments I have made in furrow draining, although they have not long been in operation, I am fully convinced it is *by that system alone* that inferior clay lands can be *permanently improved*, and their *productiveness increased*.

Furrow-drains have advantages which cross-drains have not; drains in furrows are not only *deeper* with the *same cutting*, but they will intercept *more water* than in any other position. It is generally admitted, that *stiff clay land* is chiefly injured by *surface water*, which has no means of escaping: by making furrow, or upright drains, 5½ yards apart, the surface water *flows quickly each way from the ridge into the furrows*, and gets off with the greatest facility; but when the land is cross-drained, at intervals of 5½ yards, it will be found, that the surface water gets off *only partially*, and consequently, unless the drains *effectually draw the water* that is absorbed the *entire distance* from *drain to drain*, (which I think impracticable) the work will be a failure.

It has also been satisfactorily proved that land which has been *furrow-drained* may be *ploughed*, when *cross-drained land cannot be got upon*. Another advantage attending furrow draining is, that land so drained may, when laid down, be safely *depastured with sheep* in *all seasons*.

Furrow-draining has not been long enough introduced into the district, to enable me to judge accurately of its *ultimate* effect upon the quality and *capabilities* of the soil, but I do entertain very sanguine expectations, that after these moist argillaceous subsoils have for *some years* been kept *free from surface* water, that *the texture of the subsoil*, from being thus kept dry, will undergo a *material change,* and that a considerable increase of produce may reasonably be calculated upon, when the wheat plant finds a *dry* and *porous subsoil,* instead of, as heretofore, a wet *retentive one.*

It is with a full conviction, not only of the *practicability* of this system in most situations, but also of its *present* and *ultimate advantages,* over *cross draining,* (which in this description of land I conceive to have entirely failed,) that I have submitted these observations to the consideration of the meeting; and I most earnestly recommend trial to be made of the plan I have proposed; feeling certain of its complete success, if the work be executed judiciously.

MR. DICKEN ON LIQUID MANURE.

At the close of our meeting, September 30th, when subjects for future discussion were proposed, I mentioned liquid manure as one of immense importance to the farmer; at the same time declaring my own ignorance of it, and my anxiety that some one better informed should urge it upon the consideration of the club.

The chairman and one or two others immediately said that ignorance of the subject was a strong reason why I myself, *i. e.*, the *ignorant person,* should bring it forward. I confess I did not, nor do I yet, understand this reasoning; but as no one present seemed disposed to undertake the responsibility, I consented to do so, fully relying upon your kind indulgence, which I have before experienced.

It has been said that a sense of ignorance is the first step in the way of improvement; and if it be the means of stimulating to inquiry and exertion, it will most certainly prove to be so.

Agricultural knowledge must of necessity be more slowly acquired than knowledge of most other arts, because both the science and practice of it are complicated; the results, too, of agricultural operations are much slower in their development, and many of them, even with the most careful management, are at the mercy of circumstances which no wisdom can foresee or avert.

Hence arises the chief benefit of farmers' clubs, that each individual may become possessed of the experience of *many,* under a great variety of times, situations, and circumstances.

"It is only in modern days that the idea of applying artificial fertilizing matters to the soil, in a fluid state, has been seriously entertained by the cultivators of the soil. This great improvement has been *one of the results* of applying the researches of philosophy to the processes of the farmer—the fruit of carefully conducted experiments, first suggested by the sagacious observations of the chemist."

It appears strange that liquid manure should so long have been overlooked by those who are so deeply interested in the cultivation of the earth, because it is evident that plants can only derive their nutriment from absorption by their roots; consequently manures must be reduced to a fluid state before they can be of any real service.

As yet I have had no experience in the application of this species of manure, it is only of late that I have become convinced of its value, and that it is of the utmost importance, not only to the farmer but to the community at large, that our attention should be directed to it, in order that the best means of applying it may be speedily ascertained, and universally adopted.

And here I cannot help commenting on the great value of our library, for in it we may find the most valuable information at a trifling expense. In searching for information on the subject before us, my chief difficulty has arisen, not from a paucity of well-written articles, but from the want of ability to select, abridge, and bring before the club the information and experience of others.

I must first beg to draw your attention to the value of liquid manure, and secondly to the means of obtaining and applying it.

The liquid is, in fact, the very essence of all putrescent manures; and not only so, but *urine,* of which a large portion is composed, contains (as Sir Humphry Davy informs us) "the essential elements of vegetables in a state of solution." He adds—"During the *putrefaction of urine* the greatest part of the soluble animal matter that it contains is destroyed: it consequently should be used as fresh as possible; but if not mixed with solid matter, it should be diluted with water, as when pure it contains too large a quantity of animal matter to form a proper fluid nourishment for absorption by the roots of plants."

The best written proof with which I have met of the powerful effect of liquid manure, and of the profit derived from it, is the report of Mr. T. Oliver, a Scotch farmer, of the drainage of Edinburgh.—*Johnson on Fertilizers,* 212.

The system there pursued is in fact *irrigation.*

Mr. Chairman and gentlemen, if we are convinced of the value of liquid manure, the next thing to be considered in relation to it is the best means of collecting and applying it, and the expense of doing so.

Wherever cattle are kept in buildings or yards, there must be considerable drainage, and this should be collected by small drains into a tank placed in the most convenient situation, the size of which must be in proportion to the quantity likely to be collected; this part of the subject is largely treated of in Johnson's work on manures, and in the *Farmer's Magazine.*

But this manure does not depend upon *drainage only.* It may be made, and that effectually, at small expense, and where there is a sufficient supply of water, to any extent. In Holland it is actually made systematically, and in this country also to a small extent. The results are most satisfactory. Since our last meeting several members of our club have had the gratification of witnessing Mr. Wilday's system, practised on his small farm near Atherstone.

For some time past he has been in the constant practice of collecting and making liquid manure. His whole plan appeared to us complete and satisfactory, and I think it may well repay any other of our friends the trouble of seeing for themselves.

It consists of carefully collecting the whole of the drainage of his yard and buildings, and also the droppings of his cattle in the fields. As much of this latter as is sufficient to make the liquid of a proper strength is thrown into the tank, and mixed with water, and after being well stirred and beaten together, is carried to the land.

Some writers assert that it is requisite to keep the liquid in the tank some weeks before it is applied to the land, that it may ferment; but Mr. Wilday is of opinion that it gains nothing by fermentation. The remaining, and by far the greater portion of the dung collected in the fields is mixed with earth, to be applied as compost wherever it may be required; but for this Mr. Wilday declared that he really had no need, from the fructifying nature of the liquid. He said he really did not know what to do with the compost heap, although it contained some hundreds of loads of the richest description. It must be remarked, however, that his whole occupation is in turf, with the exception of one small field.

I have since found the same plan recommended in the *Farmer's Magazine* for November 1839, page 355. The expense of the whole will be that of a tank, a pump, and a water-cart. On this point I beg to refer you to the *Farmer's Magazine,* September 1840, page 181.

Thus, in whatever way we view the question of liquid manure, to which our society now directs the attention of the English farmers, an abundant field of research presents itself on every side: it is evidently an investigation likely to repay the cultivator for the labour he may be induced to bestow upon it. By such manures nourishment for vegetation is more equally diffused through the soil, and becomes more speedily serviceable to the crop, than by any other mode of cultivation. Thus we see a much smaller quantity of manure, if uniformly mixed with land, is sufficient for all the purposes of fertilization than is commonly believed. Such investigations must be of the highest interest to the farmer and to the public in general, for they relate to the increased produce of the land of England, and not only does a fortunate experiment carry with it its own reward, but even an unsuccessful one is not without its advantages; it serves, at least, as a beacon to other cultivators, and affords that satisfaction which ever accompanies the acquisition of knowledge.

THE PATENT STUCCO PAINT CEMENT.

An extraordinary sensation has, we understand, been created in the building world by the introduction of a perfectly new description of cement or stucco, which promises from its peculiar advantages both of properties and price, to supersede any hitherto introduced. The proprietors of this important discovery (which is secured to them by patent) are gentlemen of very independent means, and have been prompted as much by a desire to benefit the public as themselves, by the publication of their invention. And they have with a caution (we think worthy of imitation) postponed its introduction until after some years' trial by the severest tests, being subjected to atmospheric changes in situations so exposed that has fully satisfied them they had rightly reckoned on the capabilities which they assert it to possess.

It is a matter of regret that 20 years ago, when the great improvements at the west end of the metropolis were projected, this composition was yet unknown. We should not now have the eye offended by the diseased and patch-work plastic attempts at stone imitation, which disgrace our best streets, and which, with all their assumption of solidity, are suffering from rottenness and decay; nor would the unfortunate tenants have just cause to complain that the winds and wet of heaven carried colds and rheumatism through the very walls of their domiciles. We have had an opportunity of seeing some specimens of this cement that have for three years been exposed by the sea-side in a situation subject to the storms of winter and the heat of summer, and in a climate which is well known as not the most dry in the kingdom;* and we were surprised at finding a complete growth of granite stone, from what was, when laid on the walls of the building, a sort of fluidized substance mixed with sand. We could hardly, in fact, find a more appropriate name for the composition than a fluid stone. It may be applied by a common plasterer with his ordinary tools, over any surface, be it brick, or plaster, or old stucco, or wood, or slate, or even glass itself (such is its tenacity); any building covered with it becoming encased in stone, resisting and defying as it ripens or becomes hard, any action of the atmosphere either of wet, frost, or heat, increasing in hardness the more exposed it is, and is arriving at maturity and perfection when other cements and stuccoes are beginning to perish. We know not that we could impart more valuable information to such of our readers as are interested in building property, either as holders or speculators, than the introduction of such a commodity as this. We leave it to our more scientific cotemporaries to dilate upon the chemical analysis of this discovery, being ourselves satisfied that we can now, at a very moderate expense, transform our brick cottage into a stone villa, that shall protect ourselves and our successors from the inclemencies of the weather, and enable us to feel that in one sense at least, under the protective influence of this cement, our house *is* our castle. A variety of the specimens of this cement are to be seen at the offices of the agents for the patentees, Messrs. Mann and Co., 5 Maiden-lane, Queen-street, Cheapside.

REMARKS

ON THE MANAGEMENT, OR RATHER MISMANAGEMENT, OF WOODS, PLANTATIONS, AND HEDGE-ROW TIMBER.

We have just received a volume, with the above title, from the pen of Mr. West, the author of "Remarks on the Turnip Question, &c." Mr. W. has selected two very important subjects; for who will venture to assert that in the whole range of rural economy, there are others of so much greater importance as to rank above them?

We do not intend at this time to renew the discussion of the "Turnip Question," although we are of opinion that it cannot be discussed too often when it is in proper hands—the hands of practical men; but we appeal to the "Remarks" themselves for proof of the paramount importance of the turnip crop to the farmer; and as to the subject now before us, we really think that viewed in the light in which it is placed by Mr. West, it has the strongest possible claim upon the nobility and gentry of the country. If it be true, as alleged by our author, that an improved system of management as applied to the "Woods, Plantations, and Hedge-rows" of our beautiful country, would yield to proprietors a large increase of revenue, and create a new and fruitful source of employment for the industrious poor, we do not conceive that any of our readers will differ from us when we say that an improved system ought to be devised. We do not say it with reference to this book or any other, but we say without fear of contradiction, that with the prospect immediately before us, every source of employment for those who live by their labour, and by that alone—every means which ingenuity can furnish of giving them wholesome work—should be thankfully caught at; and as Mr. West has entered at large upon the question, with the professed view of showing that a much greater number of men may be employed in the management of woods, &c., than there has heretofore been, we devoutly hope that as the proper season for operations of this sort is approaching, all who possess " Woods, Plantations, and Hedge-row Timber," will procure the book, and institute a rigid inquiry as to their state and condition. We hope frequently to advert to this subject again, and we shall occasionally introduce an extract from the " Remarks." We were particularly struck with a reference which Mr. W. makes at page 61, &c., to a large plantation in Lincolnshire, belonging to Christ's Hospital, which he adduced as an instance of gross mistake in the original mode of planting, and of subsequent "*mis*-management." We would respectfully invite the attention of the governors of " that splendid charity" to Mr. W.'s remarks thereon, which we give below.

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* Plymouth, where the cement is manufactured.

" It is impossible, at this distance of time, to fix the exact amount of blame or responsibility which of right attaches itself to the name of Poutey, for instance, who planted an immense tract of land near Lincoln, belonging to that splendid charity, Christ's Hospital. Tradition, which however may do him injustice, accuses him of having contracted to plant with larch and oak, and having, on some pretence or other, substituted Scotch fir. Whatever was the precise amount of *responsibility* attaching to him, I know not; he might be following out the letter of his instructions, for aught I can tell, but it is quite certain that, even with the then imperfect knowledge which was possessed of the value of larch, *a very great mistake* was committed in planting nearly a thousand acres of land, which was well adapted both for oak and larch, with profitless rubbish like that which is now seen upon it. A work of that magnitude ought not to have been intrusted to any one who, either from mercenary motives or from limited views, was capable of falling into such a gross error, as to the interests of his employers. It is no exaggeration to say, that if the Skillingthorpe plantation had been planted, as it ought to have been, with oak and larch, together with a few spruce firs, and if Poutey had left *suitable instructions with those who had to take care of it after his superintendence had ceased*, it would now have been, at the most moderate computation, *fifteen hundred per cent. more valuable than it is.* If it were private property, I should not presume to add what I now feel myself at perfect liberty to do, with reference to its present condition and the future prospect respecting it.

" It is at present almost universally a *Scotch fir plantation ;* these are of a most miserable size compared with what they might have been under good management, and they are withal very coarse. There may be seen among them just larches enough to perpetuate the folly of the original planter, and to excite, at his periodical sales, the keen regret of the present steward that he has not more of them to sell. There are also a few oaks of such quality as fully to prove that they would have thriven well had they been planted. Further, the Scotch firs are so thick, and they are *feathered down so low*, that the plantation is not *healthy*. It is true that under the present *much improved* management, an attempt is being made to remedy this evil, and it is quite clear that the condition of the trees will be greatly bettered, but the misfortune is—and here I come to speak of the prospects of the plantation—that *they are not worth culture.* I have no hesitation in stating this to be my deliberate opinion ; the timber—if timber it can be called—is worth almost *nothing now*, and in such a locality I can see no probability of its ever realising, so as to justify those in whose care it is placed, in continuing it as it is. The plain and obvious course of the managers of this fine estate then is, *to stub up the Scotch fir, and replant the land with oak and larch.*

" In further proof of the propriety of this opinion, I would remark that, in this locality, both oak and larch fetch *very high prices*, and there are probable grounds for expecting that they always will do so ; while, if the present race of Scotch firs should stand as long again as they have already stood, they will make comparatively little.

" It is not too much to say, that if this plantation was the property of a private gentleman, the Scotch firs would be extirpated as speedily as follows, and a systematic plan, providing that a certain number of acres should be stubbed and replanted every year, would at once be laid down ; but public bodies are not so easily moved, and it is therefore to be feared that in this case, the public will not, for some time to come, derive that benefit from the property which would certainly be the result of proper management.

" The whole might be re-stocked with suitable kinds of trees without any considerable outlay to the hospital, if arrangements were made with a party capable of carrying out some such comprehensive plan as the following :—viz., an agreement with a responsible person, carefully worded, providing that he should stub or grub up a stipulated number of acres at the commencement of a sort of lease ; *taking the stuff*, either in part payment, or wholly if it were *sufficient*, and that he should, on such terms as could be agreed upon, continue to grub up and plant a specified number of acres every succeeding year.

" In twelve years, *if the work were well done*, there would be some return from the *thinnings of the piece first planted*, and the rate of return and profit would from that time continue to increase every year, until an amount would be realized which would much more than equal the largest expectations of the Governors."

REVIEW.

JOHNSON'S FARMER'S ENCYCLOPÆDIA.

Longman and Co.

During the progress of this unique work we have from time to time expressed our high approval of its arrangement, and the good judgment displayed in the selection of matter for the different articles. It now comes before us in a complete and finished form in one bulky volume, and we venture to affirm advisedly, that there is no encyclopædia on husbandry which will be found so useful to agricultural libraries, farmer's clubs, or the cultivators of the soil in general, as Mr. Johnson's elaborate work. The labour of arranging and compiling such a volume must have been immense, more especially when we observe how extensively the author has himself contributed to its pages learned and practical essays on every branch of science. The alphabetical arrangement of the articles will be found to be of considerable advantage to those who will have to turn very frequently to it for information. Every subject of interest to the cultivator of the soil appears to have been touched upon with the hand of a master. Chemistry, botany, vegetable physiology, entomology, agricultural mechanics, rural economy, and the management of the farm, are all copiously treated of, and what is of infinite value, reference is continually made to the most modern and very best authorities, should the reader wish to pursue the subject further.

THE COTTAGE FARMERS' ASSISTANT IN THE CULTIVATION OF HIS LAND, &c.

By Cuthbert W. Johnson, Esq., F. R. S., &c.

James Ridgway, Piccadilly.

Mr. Johnson possesses indeed the pen of a ready writer, and seems never to weary of well doing; for no sooner is his bulky and useful Farmers' Encyclopedia completed, after which one would have supposed the author needed some respite from his literary labours, than we find him again putting his shoulder to the wheel in behalf of the less opulent cultivators of the soil, but who are nevertheless the main support of Britain's greatness.

"The sturdy peasantry, our country's pride."

The little work before us is designed to be a cheap manual for the tenants of "Cottage homes of England," which have been so well sung by the late lamented Mrs. Hemans. It is calculated to be eminently useful, and contains "*multum in parvo;*" tillage, the saving of manures, the improvement of the soil, management of crops, rearing of poultry, care of live stock, a monthly calendar of business to be done, household directions for brewing, baking, cooking, &c., useful market tables, and a hundred other necessary matters are touched upon; indeed, we have not met for many a day with so portable, cheap, and complete a guide-book for the cottager. The work should be extensively circulated by those who can afford to be generous in stimulating honest industry, and it would form a neat little present for distribution among the candidates at the meetings of local agricultural societies.

NEW PATENT.

MACHINE FOR HULLING CLOVER SEED.—William C. Grimes.—The patentee says—"In the construction of machines for hulling clover seed it has been a common practice to depend rather upon acute asperities to break the hull, than upon a more permanent principle, or structure, less affected by use; hence such machines have become speedily defective as they became worn; the seed passing through the machine in a current too thin or diffuse for the round teeth or asperities to act with sufficient force upon the light and scattered pods or hulls to break them. In my machine the hulling is effected while the chaff and seed (in a mass) is under a pressure produced by centrifugal force; thus the effective power of the machine is rapidly increased with its activity." A runner is attached to the lower end of a vertical shaft, and is provided with teeth above and below, and on its outer periphery, which is rounded. The teeth on the upper surface extend much nearer to the shaft than on the under surface, the space between the inner ranges of teeth and the shaft being occupied by arms which admit of a current of air to pass upwards. The upper end of the shaft is provided with a fan consisting of arms or vanes, and the whole is surrounded by a case, that part which surrounds the fan being provided with a valve or damper to regulate the current of air, and the part which surrounds the runner with teeth on the inside, to correspond with and pass between those on the runner. The grain is fed in through a hopper, that opens into the case near the inner circle of teeth on the upper surface of the runner, and by the action of the centrifugal force it is forced outwards, towards, and around, the periphery, and then along the bottom towards the centre, where it meets with a strong current of air, produced by the fan at the top, which carries up the chaff and permits the grain to fall down. The centrifugal force resists the escape of the grain at the bottom, but as the body of grain is greater at the top than at the bottom it is forced out. Claim.—"What I claim as new, and as my invention, and desire to secure by letters patent, is the manner of hulling clover or other seed, under a pressure produced by centrifugal force, after the manner and upon the principle hereinbefore set forth; that is to say, the seed in the hull is passed through a hulling chamber, in which it first diverges from, and is then conveyed towards, the centre; centrifugal force subjecting the seed and hull to a pressure, less or greater, according to the velocity of the wheel, spheroid or runner, as it passes over or around the bilge or periphery of the same." Secondly,—"I claim the combination of the fan with the hulling wheel or ring, and operating after the manner or upon the principle above described." Thirdly,—"I claim the mode of regulating or maintaining a nearly uniform current of air through the machine, by means of a valve or door, operating after the manner or upon the principle hereinbefore set forth."

AGRICULTURAL QUERIES.

ON WATER FARCY AND THE TREATMENT OF FOALS.

Mr. Editor,—A few years ago you very kindly inserted a letter for me soliciting advice on the best mode of treating a horse, subject to occasional swelling of the legs, caused by what farriers call "water farcy." I have to thank several of your correspondents for having promptly met my wishes, and think it may be useful to mention, that I find two ounces of finely powdered nitre, mixed with a good allowance of corn and chaff to disguise it (my horse will not touch it dissolved in water, and requires to be made hungry to eat the above) prevents the swelling of the limbs altogether. The moment I perceive the animal does not finish his corn as usual, I give him the nitre as specified. He has not been off his work a single day these two years, and has had the diuretic but thrice in that period.

I conceive it a great omission in most veterinary works that no notice is taken of the diseases of foals. It is a general custom in this county for farmers to rear a few colts annually; but, if any are taken ill in their early days, it is in vain to seek in Clater, or in Mr. Youatt's work on the horse, for instructions how to treat them. A thriving young foal will gallop himself into a profuse perspiration in the evening—lies down to sleep, takes a chill, scouring ensues, succeeded most likely by obstinate constipation, terminating in inflammation of the bowels or lungs. Some blood taken off in time might possibly avert the evil, but the owner is diffident about bleeding so young a creature, and only resorts to it, when too late, as a sort of forlorn hope. Knowing that many valuable young animals are frequently lost somewhat in the manner described, I feel encouraged by my former successful application to the subscribers of the "Mark Lane Express" again to appear before them in quest of information; firstly, how much blood can be taken from a foal in high condition, say from one month old to six, from six to twelve, with a view of averting an internal inflammatory attack, (of course when that takes place one continues until the animal is faint); secondly, what medicine, and the quantity, ought to be administered when afflicted with the scour; thirdly, if constipation ensues, how is that removed without endangering a return of the looseness. If gentlemen experienced in breeding horses will kindly take the trouble to reply to these queries, and furnish any other information on the subject they may think advantageous to be known, I am confident they will be conferring a great obligation on many who, like myself, have no educated practitioner in their neighbourhood, and are forced, against their inclination, to undertake the medical treatment of their cattle.

August 5th. A Devonshire Farmer.

THE SUBSOIL PLOUGH.

Sir,—I read in your July number, page 54, of a moveable mould board plough, invented by Mr. Armstrong, of Stirlingshire, for subsoiling after removing the surface. Thinking of purchasing a subsoil plough the ensuing autumn, I wish to enquire, through your valuable Magazine, if the above implement is likely to perform both operations well upon a stiff clay soil, that is drained; the cost price, and where it can be procured; or if I could purchase any other plough better calculated for that purpose upon a farm where only five working horses are kept.

I am, Sir, your obedient servant,
A Tenant Farmer.

Shipston on Stow, *Worcestershire*,
August 6th, 1842.

P.S. In reference to "Villier's" enquiry in your August number, of a cure for diarrhœa in lambs, I beg to say, I have used at the commencement of the complaint, with very good success, a tea-spoonful of laudanum in a wine-glassful of Port wine to each lamb, given upon an empty stomach, and kept from water.

ON WINTER VETCHES.

Sir,—Being a subscriber and constant reader of your *Farmer's Magazine*, I should feel much obliged to some of your correspondents if they would answer me a few questions on the growth of winter vetches on a wheat-stubble.

1st. Whether it is better that the stubble should be mowed, and the sowing to take place as soon as possible.

2nd. Whether it would be more advantageous to lay the manure on the stubble and plough it in, or lay it on the surface after the vetches are up; and if so, when is the best time?

3rd. Are winter vetches at all to be considered of any disadvantage to the fallow if got off in time to be cleaned for turnips, and what kind of seed is generally considered preferable?

In the Magazine for July there is an account of some vetches grown by Mr. Wm. Jones William, of East Ilsley in Berkshire, which are called in his neighbourhood "racers;" can you inform me whether they are common, and where is the seed to be obtained?

Should you be kind enough to insert this in your next number, you will much oblige,

Sir, yours most respectfully,
A Subscriber.

THE CONSTRUCTION OF FOLD-YARDS.

Sir,—Being one of those unfortunate savages who were transported from Van Diemen's Land to Flinder's Island, for no other crime than that the English farmers have not land enough at home, I cannot be supposed to feel much interest in either arts or science; yet as your correspondent R., in last month's number of the "Farmer's Magazine," has kindly hinted at himself as an example of a great and growing evil,* I will answer his queries to the best of my power.

I presume the young farmer's fold-yard is already made, and that a perfect drainage is the great desideratum to be supplied. He should therefore form his tank at the lowest convenient part of the fold, building it either of stone or brick, and puddle the bottom under the stone as well as the sides with clay, to prevent loss by leakage, and close up the top either with loose boards or a trap-door, to prevent anything falling in. In constructing the drains leading to the tank, he should not look so much to their being permanently effectual as to the ease of opening them when they have become closed, which will necessarily be often the case, notwithstanding the precaution of a grate being placed at the entrance, which should always be done. The drains should be formed of bricks, with a flat draining-tile set upon the outsides, and covered with boards cut to drop inside the flat tiles and rest firmly on the bricks, forming altogether a good and easily-opened drain. I need scarcely mention that the boarded covers are nearly on a level with the surface, and that no earth need be thrown over them.

Your correspondent's desire of obtaining the fertilizing power of urine in a solid form, by allowing it to settle and then drawing off the liquid at a higher level, cannot be gratified, the enriching qualities being perfectly dissolved in the whole of the liquor. He has probably been led into this idea by seeing the deposit of dung and other substances which are always more or less carried by the urine into the tank or other place where it is allowed to collect, but he must not allow the appearances to deceive him; the liquid is the coveted prize, and should be used as quickly as possible, as it deteriorates by keeping. Trusting these answers will be satisfactory to R,

I remain, yours,
A South-sea Savage.

A Correspondent enquires, whether it is most beneficial to the following wheat crop to *feed* off or *mow* the second crop of clover.

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* When a large farmer declares he cannot "submit to the labour" of carting his manure, depend upon it he has got *too much land*. The evil is a great one, but the remedy simple: let him occupy a few acres less, and he will have time to attend properly to the remainder.

Having observed in the continued reading of your paper, with what readiness queries have been answered, I beg, through the medium of your paper, to ask your numerous readers, of whom probably some may be able to give the needed information. On mossy, peaty land (not much ploughed, owing to the proximity of water), what has experience proved to be the best to sow after turnips? Will peas be a good crop on such kind of land, or is the land adapted to the growth of peas? The land is not very rich, to force a crop very much. A little information on the above point will confer a favour upon yours obediently, W. R. M.

August 12, 1842.

A Correspondent says—"Understanding that rice is made use of in some districts for the feeding of pigs, I shall be glad to be informed, through the medium of your Journal, by any of your correspondents that have tried it, what are its recommendations and qualities for the purpose.

ANSWERS TO QUERIES.

LIQUID MANURE.

Sir,—Owing to my being absent from chambers, I did not see the letter of an "Experimental Farmer," addressed to me in your paper of July 18th, until very recently. I shall ever be ready to answer in the best way in my power, the queries of the faemers of our island, and if I do sometimes omit to answer any of the questions of your excellent correspondents, it is chiefly owing to a dislike which I feel to anonymous correspondence.

I have never seen a liquid manure, composed of soot and water, applied to grass land, but I have no reason to doubt its usefulness; only in the case of grass-lands I should advise a larger proportion of soot to be used than in the case of stove cultivated plants. Salt and lime do very well for grass land dissolved in water. The Swiss mixture of soot, rape-cake, and vitriol, is a very vague, and a very unchemical mixture; that from the "Farmer's Magazine" is the common mode of preparing liquid manure, with the exception of the *boiling* water, which hardly seems an useful variation. The salt and water mixture would produce a solution of a similar strength to that of the sea. My remark as to the requisite degree of impurities in liquid manures applied only to those composed of organic matters. The salts (and soot owes a considerable portion of its fertilizing powers to the presence of salts of ammonia) must be applied in solutions of a much inferior strength.

I hope, sir, to be able very shortly to furnish you with much additional evidence, in support of the value of manures applied in a liquid state; a mode of application, even in a national point of view, of very considerable importance to agriculture, for by the adoption of this mode of increasing the fertility of the land, not only is the general supply of food increased, but this may be effected chiefly, and in many instances entirely, by the use of materials to be obtained already on every farm.

I am, Sir,
Cuthbert W. Johnson.

Gray's-Inn Square, August 15th.

CALENDAR OF HORTICULTURE FOR SEPTEMBER.

The peculiar character of the season, which, while we now write, affords a continuance of that splendour which is a perfect contrast to the gloom, cold, and wet, of 1841. Our thermometer has for successive days been at 80—83 at its maximum; sun unclouded, and the power of its direct ray such as to scald apples as if by fire, and to render wood-work too hot for the hand. Plants droop as if perishing, and some *do* fail; but they generally rally at night. The water-pot is in perpetual requisition, and shading becomes indispensable, otherwise a cluster of grapes, as we have many times observed, may be rich in promise at one hour and become deformed by a number of its berries being scalded, within the course of a few minutes.

Insects abound; the earwig preys upon the carnation and dahlia, but above all, myriads of wasps clear off a crop of fruit with a rapidity perfectly astonishing. These facts are worthy of being chronicled, for it is of the last moment to determine if the weather and seasons do or do not move in a circle. Seasons doubtless revolve; causes remain the same, and if we could trace the order of the circle, our meteorology would be proportionally improved; observation can alone determine, for all our tables are at fault. These remarks lead first to the consideration of the

FLOWER GARDEN.

We must anticipate rain, though, till the glorious harvest be safely collected, all minor objects should give way. But the drought, if it continue till September, will embarrass our amateur exhibitors very considerably. The dahlia, we hear, is much gnawed by wasps; hence the necessity of hooding the blooms under moveable transparent shades. Water is indispensable, and a very minute portion of nitrate of soda, given again for the last time, very early in the month, appears to promote healthy verdure, and to make the application of water more effectual. Thus, in 1825, that hottest of summers, when wall-fruit half-grown fell to the ground, an ounce of common salt added to three gallons of water appeared to secure the fruit of large trees. We are ignorant of the direct operation of saline solutions, but they seem to retain moisture in the soil. The nitrate operates chiefly by its azote, perhaps within the organism, though the decomposition of the salt within the soil is not improbable.

Rain only can warrant the transplanting of rooted pinks, picotees, and other herbaceous plants; but if it occur in time, many such will be well established by an early removal. Keep all the quarters clean and free from every kind of litter; remove weeds, and stir the surface; finally, regulate box edgings for the season.

FRUIT DEPARTMENT.

Peaches and Nectarines.—Protect the fruit, either by transparent coverings over the trees, or, which perhaps is better, by a thin layer of fine tow wound over the best of the fruit; wasps and flies are thus hampered. Displace superfluous leaves, but do this cautiously if the sunbeams retain their excessive power, for the absence of colour that a covering of foliage may cause is a far minor evil to that sun-scalding which is so prevalent. Nail in all the well placed young shoots.

Vines.—Finally regulate these trees on the open wall, and protect the better clusters with crape bags. Suspend also numerous bottles of sweetened water to entice wasps and flies. Wasps' nests should be taken; some persons destroy them by cold water only: late in the evening two men, one bearing a couple of large buckets, the other with spade and lanthorn, go to a spot where a nest has been traced; one opens the ground above it, after closing the exit holes, and the other deluges it with water. The earth is then worked and puddled with the spade, more water is poured on it, and thus the ground and the nest within are reduced to a complete batter. One man alone cannot operate effectually.

Apples, such as the Nonsuch, Keswick, and Hawthornden, fall off sadly; the sun induces partial maturity. Such as ripen perfectly should be carefully gathered and stored, but we fear that few will keep well.

Strawberry-beds can be made to perfection after the first penetrating rains; but they cannot be expected to bear well next season: therefore persons should be prepared to sacrifice the blossom of the first year, in order to secure a double produce in 1844. Trench deeply, and introduce much turfy loam. The varieties which are fit for every purpose and season are the following: *Keen's seedling*, the earliest, very prolific, not highly flavoured, particularly suitable to forcing; in the garden it should be planted in beds, the rows two feet asunder, and in two aspects, south and east. *Old pine* in the same way, but some in a north aspect. *Myatt's pine* some pretend to prefer, but nine of ten persons can never grow it at all. His new *British Queen* is extolled, but we have not yet proved it. *Knight's Elton*, a conical scarlet fruit of extremely pleasant acid, comes in late, and continues long; east and north aspect suits it. The *Grove-end scarlet*, and the *Hudson's bay* strawberry are rich in flavour and of buttery, firm texture.

Gooseberry bushes were much infested in April and June, but we believe that the August brood of caterpillars failed, by what enemy we know not. A receipt has just been observed, which at this season might be tried if any trees were attacked. Take one large fox-glove plant with its root, chop it, and boil in one gallon of water; these form the proportions; and an old copper may be the vehicle. Water the infested bushes, and it is stated that the poison of fox-glove will immediately destroy the vermin, and in a great degree prevent its appearance next year.

IN THE FORCING-HOUSES,

Pine-apple fruiting plants should be finally potted and arranged.

Successional plants are to be retained in deep, moist pits. No check of the growth must be permitted, therefore a full temperature must be kept up by dung-linings. When the heat decays six or eight of grass-mowing, laid and pressed over the tops, and thrust between the walls and dung, will re-excite the mass.

KITCHEN GARDEN.

Brocoli.—Some persons transplant a crop, but it is late. It would be better to check the too rapid growth of a set of plants, which it is desirable to retard, by thrusting a fork or spade under the roots, and with the other hand to disturb the plant a little, while the soil is loosened. Practice will soon instruct any one to do this without changing the depth of the plant.

Cabbage seedlings of July and August may go early into nursery beds, by which removal they acquire a storky growth, and abundance of fibrous-roots.

Celery.—The art of procuring fine plants is, first, to make the trenches rich; next, to lighten the surface, pulling off the loose straggling leaves; then to water; and when the heart of each plant rises full and plump in the centre, to tie a strip of bass round the leaves, almost close to the earth of the trenches. Earthing by degrees so as never to cover the central shoot, must be rigidly attended to in dry weather; and thus plants of a dark red, or Italian white, may be had weighing 7 to 10lbs. each.

Endive will be coming on; some must be tied for blanching, others watered, if the weather continue warm and dry.

Lettuces.—Plant out many, some on ridges, others in flat beds; sow also a little seed for hardiest cos, or brown Dutch.

Mushroom beds may be made for winter supply; the safest plan is to make use of a mushroom house, or dark warm shed. The best and strongest horse droppings, and pure yellow loam over them, form the best bed.

Turnips—Thin the plants, and keep the ground clean by hoeing.

Kidney Beans must be constantly gathered, otherwise the plants will cease to bear. The runners do not set freely if the soil be very dry and the sun scorching, as it has been of late. Two or three copious waterings would be beneficial.

Break down the stems of *Artichokes*, and make the soil clean.

This is the month of weeds, and as the ground is very hot, the first showers will cause them to spring rapidly; groundsel, spurge, and sowthistle, are the most common, and they seed profusely; chickweed is most pertinacious: it is surprising to observe the vast profusion of herbage which is supported by the mere thread-like stem of this herb.

Raspberry-plants, if not already regulated, should be divested of all the late bearing wood; thus the new canes of the summer will be more exposed to air and sun.

Make every department neat; prune, remove dead wood, take away old herbaceous stems, and superfluous shoots; sweep lawns, and mow again if required. Take up bulbs and root crops as wanted, and prepare all the departments for the gradual approach of winter. Thus the tender plants must be timely potted, otherwise they will make no roots, and be shabby all the season.

In digging up the early potato stock the ground will be most effectually cleared, and at the same time improved, by being laid up in regular ridges; the same may be said of the late pea land. A cold, flat, compressed surface is always the worst form in which any plot can be left during winter.

IPSWICH LAMB FAIR.

This fair—as complete a test of the state of demand for sheep and lambs in this and the neighbouring counties as can be consulted—was held on Monday and Tuesday last, upon the usual grounds at Handford farm, upon the London Road, but although upwards of 120,000 lambs were penned, the greater portion of them in better condition than the unprecedented heat might have led buyers to expect, fewer sales were effected, though a remarkable depression of prices took place, than has been the case for many years. Indeed, it appeared throughout both days an alarm existed among the more cautious purchasers lest they should be induced to relax their purse strings, and enter upon the purchase of even small stocks, and this feeling obtained almost as generally with regard to beasts as to sheep and lambs, except in cases where butchers were under the necessity of becoming purchasers to keep up their retail supply of meat.

The principal reason assigned for this year's declension of business of the fair, is the present want of green food for all kinds of stock, and the little possibility at this period of the season, that rain can make any revivifying impression upon the parched pasture lands. Turnips are also looked upon as failing extensively in large districts—and added to this, far larger breadths of land have been sown with wheat than in the year preceding, thus subtracting from the area hitherto occupied by herbage and succulents of various kinds. A report also prevailed that the operation of the new tariff should be tested, and that especially as far as cattle was concerned, the present importation should be allowed some scope. Indeed the tariff generally—the new sliding scale for regulating the introduction of foreign corn—and the large difference existing between the reduced prices of wheat and the high prices of bread—the farmers contending that they received no share of the exorbitant profits—were frequent topics of conversation.

Lambs of fine quality might on the present occasion have been bought for 15*l.* a score—*last* year they ranged from 20*l.* to 24*l.*

Fat beasts fetched their prices with the butchers. Eight shillings a stone was obtained for good beef. Lean beasts brought from 4s., 5s., to 6s.

A large exhibition of agricultural implements was upon the ground, from the manufactories of Messrs. Ransomes', Messrs. Bond, Turner, and Hurwood, and others. Among those shown by Messrs. Ransomes', we noticed a portable locomotive steam-engine, with a thrashing-machine attached. This was exhibited with the "steam up," and travelled off the ground, at easy speed, to the astonishment of those who witnessed it. The same manufacturers also exhibited an iron cart, the ingenious invention of Mr. Arthur Biddell. This vehicle preserves its equilibrium in whatever manner it may be loaded, and prevents an undue weight being thrown upon the back of the thiller horse. By the simple contrivance of a winch carrying a chain round an iron spindle, it is turned to any desired angle for loading or unloading.

We also observed an ingenious mill for grinding corn, the principle of action being that of two steel rollers with teeth cut in them spirally, revolving at different speeds, the grain passing between being cut or crushed as by a succession of scissor edges.

Messrs Ransome also exhibited "Smith's Albert ploughs," the invention of Mr. Theophilus Smith, Attleborough, Norfolk. It is an invention of a very simple character, "and the object of the inventor in the construction, is to supersede the necessity of the person guiding the plough having to stop his horses, and to leave his work to go to the head of the plough to make such adjustment in the apparatus as is required to obtain the suitable elevation or depression of the plough share; or what is generally understood by the deepening or fleetening of the plough." The apparatus may be fixed to old as well as new ploughs.—*Suffolk Chronicle.*

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR AUGUST.

With lively feelings of gratitude we are this month called upon to report upon the progress of harvest-work, and the remarkably fine weather which has been experienced in nearly, or quite, the whole of the month just brought to a conclusion. Within the memory of the oldest farmer living, the former has never been known to have been carried on under such remarkably cheering auspices; while the latter has been fine almost beyond precedent. In our western and southern districts the sickle was in full operation about the 20th, and at the time we are now writing, at least three-fourths of the wheat, including a large portion of the barley and oats, have been secured in the best possible condition; while a conclusion is expected to be arrived at about the 10th proximo. The quantities of corn cut, in Essex and along the eastern coasts, have been immense; while in the midland and northern counties very good reports have come to hand. The great question which naturally agitates the minds of the growers is, what is the actual condition of the crops in general as regards weight and quality? The fine genial atmosphere experienced during July had, it is well known, a very beneficial effect upon all descriptions of the soil's produce, but more particularly upon wheat; while the warm sunshine has brought the crops to maturity surprisingly fast: in fact, we scarcely ever saw them ripen so regularly as has been the case this season. All these circumstances are, we need scarcely intimate, in favour of the agriculturist; and it is truly pleasing to be enabled to observe, that in many cases the new wheat on sale in the various markets has come up to 66lbs. per bushel—the quality very superior. Taking, therefore, all things into consideration, holding in view the almost total absence of smut, making every allowance for partial failures of plant, and the non-sowing of the whole of the autumn wheats, we, after the most mature consideration, are led to the conclusion that the produce of wheat for this country will be nearly an average—but beyond that our expectations do not extend. We have no wish, whatever, to give a highly-coloured statement of the prospect of the fields and in the barns, and have every reason to believe that the estimate here given will be found as near the truth as possible. As to barley, this description of corn is represented as abundant, with quality seldom equalled. Oats appear not quite so prolific, especially on thin soils; nevertheless, a fair return is looked forward to.

The turnip crop—though it has somewhat suffered from want of moisture—has gone on well, and a good supply of this winter pabulum is looked forward to. The hay harvest in the north has been concluded; but the swathe has been remarkably light.

Notwithstanding the epidemic has not been so much complained of lately, the rates demanded for store stock in Norfolk, Suffolk, and our northern districts, have been comparatively high; still the supply of grass has not been by any means over-abundant.

One of the most stirring incidents of the month has been the introduction, by the new Tariff, of live stock into this country from Holland: and expectation has been put to the stretch as to what quantity may in future be drawn from that or any other foreign part. The first importation for the London market was composed of 12 beasts, by a steam vessel, from Rotterdam, the condition of which was quite as good as could readily be expected; while they—with later shipments—have stood, under proper management, the sea voyage remarkably well. The bullock supply above noticed resembled as nearly as possible, the old English Lincoln breed, which, with good care in feeding, might be made valuable. The average weight, per head, was about 27 stones of 8lbs. per quarter, and the prices realised were from 21*l.* 10s. to 23*l.* 10s. each. There are annually held in parts of Holland, fairs, at which bulls only are sold; and at one of these—in which no less than 1,600 of these animals were offered—in the neighbourhood of Bremen, one of our speculators purchased nearly 50 of them, in very poor condition, at only 3*l.* 10s. each; while they were disposed of in Smithfield, with difficulty, at 7*l.* Latterly, the receipts of beasts, not only in London, but also at Hull, and other ports, have exhibited a great falling off; indeed they have been scarce worth the necessary expenses of freight, &c., leaving wholly out of the question prime cost. The numbers of stock imported for the metropolis, during the month, have comprised nearly 320, consisting of bulls, oxen, cows in calf, and stores. And now the item of profit presents itself to our notice. From all that we have been able to gather, we should say that a positive loss of quite 1*l.* per head has been sustained by the shippers of stock to this country; still, however, it appears they are determined to prosecute their enterprise. Let us take, as an example, the 50 bulls above mentioned—which, by the way, were scarcely fit for consumption in a workhouse or prison—and we shall find that their owners suffered in pocket severely by them; since the account in relation to them, stood thus:—

	Per Head.		
	£	s.	d.
Prime cost	3	10	0
Freight and other expenses to London	3	5	0
Duty	1	0	0
Expenses here	0	17	0
	8	12	0

From the above it will at once be seen a loss was sustained of *one pound twelve shillings each.* Our letters from Hull state that the quality of the imports of stock being generally better than with us, now remunerative quotations have been realized. These, we beg to observe, are mere matters of fact details, and as such worthy of record; but, from the experience we have had, and knowing, as we do, to what perfection, by skill and care in feeding, the foreign stock may be brought, we are quite convinced that ultimately great pecuniary sacrifices will be sustained by our graziers. Two steam vessels have entered the port of London with beasts; while the remainder of the supplies have come to hand by sailing packets; and the method adopted in bringing them hither by the latter mode of conveyance has been to place a considerable quantity of sand or soft earth in the ship's hold (in which the stock is placed), and thus, with the aid of barriers erected so as to prevent collisions in heavy weather, the beasts have been mostly received in good condition, and very free from bruises. The result of our inquiries is that large imports may be expected from Germany and Holland, where, it appears, there is a superabundance of lean stock; but from France little or nothing is looked forward to. A great deal has been said respecting the superior quality of the foreign supplies; but we beg to observe that, having ourselves tasted some of the Dutch beef, we never saw anything worse of the kind brought to table.

Our Scotch advices intimate that the crops look extremely abundant, and that harvest has partially commenced there. The wheat, barley, and oats are stated to have a very healthy and promising appearance, and a good general yield is looked forward to. The corn trade has proved extremely heavy, and the prices of most articles have suffered a material depression.

By letters from Ireland, we learn that the progress of harvest has been very great, and the produce is of fine quality, with a heavy return. Large supplies of new grain have been on sale in the various markets, with which, as well as old sorts, the trade has ruled dull at lower rates of currency.

The following is our usual monthly statement of the supplies and prices of fat stock, exhibited and sold in Smithfield Cattle Market. The former have consisted of 7,200 beasts; 159,400 sheep and lambs; 820 calves; and 2,394 pigs; while the latter have ranged as follows:—Beef, from 3s. 2d. to 4s. 4d.; mutton, 3s. 4d. to 4s. 6d.; lamb, 4s. 6d. to 5s. 2d.; veal, 3s. 6d. to 4s. 6d.; and pork, 4s. to 4s. 10d. per 8lbs., to sink the offals.

The quality of the bullock supplies has proved very inferior; but that of other kinds of stock has been very saleable, while but few cases of the prevailing epidemic have come under our notice. Notwithstanding the arrivals of slaughtered meat up to Newgate and Leadenhall markets have, as is usually the case at this season of the year, been small, the demand has ruled inactive in Smithfield, but without any material fluctuation in prices.

The principal portion of the bullock supplies has come to hand from our northern grazing districts, and a decided falling off has been apparent in those from Scotland.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, August 30, 1841, and Monday, August 29, 1842.

At per 8lbs. to sink the offals.

	August 30, 1841.					August 29, 1842.			
	s.	d.		s.	d.	s.	d.		s.	d.
Coarse & inferior Beasts	3	6	to	3	8	3	2	to	3	4
Second quality do.	3	10		4	0	3	6		3	8
Prime large Oxen	4	4		4	6	3	10		4	0
Prime Scots, &c.	4	8		4	10	4	2		4	4
Coarse & inferior Sheep	3	8		3	10	3	4		3	8
Second quality do.	4	0		4	2	3	10		4	0
Prime coarse woolled do.	4	4		4	6	4	0		4	2
Prime Southdown do.	4	8		4	10	4	4		4	6
Lambs	4	10		5	8	4	6		5	2
Large coarse Calves	3	10		4	2	3	8		4	0
Prime small ditto	4	4		4	10	4	2		4	6
Large Hogs	4	0		4	6	4	0		4	6
Neat small Porkers	4	8		5	0	4	8		5	0

SUPPLIES.

	August 30, 1841.	August 29, 1842.
Beasts	3,200	3,021
Sheep and Lambs	30,400	30,690
Calves	290	192
Pigs	400	289

The show of meat in the dead markets having been fair for the season, the demand has proved inactive, at the annexed rates:—Beef, from 3s. 2d. to 4s.; mutton, 3s. 6d. to 4s. 2d.; lamb, 4s. 6d. to 5s.; veal, 3s. 6d. to 4s.; and pork, 4s. to 4s. 10d. per 8lbs., by the carcase.

AGRICULTURAL REPORT FOR AUGUST.

In the central parts of the kingdom the wheat harvest may be considered as finished. We have not observed a field for nearly a fortnight, and as to the condition, weight, and brilliancy of sample, no expressions could be too forcible. The yield in some places is enormous, the grower himself talking of ten loads per acre. From all parts of England, Scotland, Ireland, the corn districts of Europe, and from America, the accounts are similar—all tell of abundance, and our own markets testify the fact. It is in vain that some persons, viewing or hearing of some extremely partial exception, attempt to depreciate. We conversed last evening only with the intelligent farmer of nearly three hundred acres, who observes accurately, knows well the nail that will drive, and who never loses sight of an opportunity. He had been offered on Saturday 15*l.* 10s. per load, and is now refused 14*l.*! "Never," he observed, "never before do I remember a rapid reduction of price during a harvest. A productive crop may have prevented any advance, and kept things as they were, but till now I never saw a steady decline." If this be the condition of wheat, what must be said of barley and oats? These crops are not quite regular—they do not, generally, "turn off" equally, notwithstanding the power of solar light and heat; still, however, both are good, and are rapidly vanishing from the fields; so are peas, and clover of the second cutting. But the turnip is the wonder—the cleanness and luxuriant vigour of rounds, whites, and Swedes, is charming, and yet, with the exception of partial brisk showers, the season has been sunny, and almost tropical. There has been, however, a good deal of brisk wind; that, and the absence of predatory vermin, have been greatly in favour of this plant. Some remarks occurred during the conversation alluded to which may be appropriate. The question was put whether, for beans, peas, and legumes in general, in field and garden, a solid bottom and open, pulverized covering soil, is preferable to one in an opposite condition, wherein the seed-bed is deeply comminuted, but the upper soil compressed by roller or by treading. The farmer avowed his belief—nay assurance—that the former was in all respects the better, adding, "We do too much—we labour without a due return." A case in point was then stated, as it occurred to a next neighbour in the spring. A bad and foul piece at the end of an orchard was cleared of rubbish, digged, and planted last year with potatoes. Early in the present year, time being short, drills, a yard or four feet apart, were made, simply with the hoe, without digging or other disturbance of the earth. Peas of various kinds were sowed, and the neighbours predicted a failure. But the plants came up with superior vigour, the surface was hoed, the peas earthed, sticked, and the spaces sowed with clover and grass. Nothing more was done; the haulm was exceedingly fine, the crop good and abundant, and now the seeds are growing. In our own garden, kidney beans were so treated, the clods only of winter being just broken down; never have we witnessed such plants, or a yield so prolific. Weeds must be kept under, because they would overwhelm and stifle the crops; but in the bald fact of deterioration we dispute the result: they do not impoverish. At all events, a solid bottom favours the lateral extension of the fibres, which can play in and among a loose, pulverized surface. We therefore deprecate deep ploughing at the time of sowing, and prefer to break up, laborate, and ridge the land, prior to fallow. Even turnips, if the surface be such as to ensure early germination of the seeds, prosper subsequently on hard land. For planted crops, indeed, such as cabbage, digging or deep tillage are advantageous—they enable the fibres to enter the soil at once. Experience has again proclaimed, in language which cannot be misunderstood, that prices depend upon supply. Had the present harvest been doubtful, the corn imported would not have reduced prices in any proportion. Now, the causes and effects are clear as the brilliant sunbeam, which has produced the existing condition of agricultural produce. A little more of a truly patriotic spirit, and much less of selfishness in all classes, would mainly effect the cure of all the evils which press upon society.—Aug. 25, 1842.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF AUGUST.

The weather has continued to be uncommonly warm, and generally as favourable for harvest operations as could, by any possibility, have been desired since our last review of the actual state and future prospects of the corn trade. During the last month, consequently, our large markets of consumption have been fairly supplied with wheats of home growth, and largely with the finest qualities of Polish and of foreign production. These supplies have very considerably exceeded the consumption, and dull sales, attended by declining prices, have been the necessary consequences. The value of wheat was previously quite low enough for the real interest of the farmers of the United Kingdom; and, as circumstances have latterly perfectly established, far too low for the real prosperity of the productive classes of every description within the British empire. The fact is, the capital of Great Britain cannot be applied, at the same time, to two objects. It cannot be expended, at the same period, in payment of fair wages to our productive labourers at home, and in payment for food of foreign growth. The same money cannot be paid, at the same moment, to the land proprietor in Poland, and to the master manufacturer in Leeds. It is to the encouragement which our free trade system has for some time past been extending to the industry of foreign nations, that we must mainly attribute the unfortunate depression in their worldly circumstances which our productive labourers are now subjected to; nor can any permanent alteration for the better be expected to occur in these circumstances until the doctrines of theory yield to those of practice; until, in fact, we return to the right principle of extending, not only moderate, but ample protection to our native industry, and to that of our colonies and foreign possessions. It was by the proper and strict cultivation of this principle that England has acquired all her commercial greatness, and it is only by a return to it that her commercial superiority can be maintained. It is not only proper but absolutely necessary to encourage the importation from foreign nations of articles which can neither be produced nor grown at home; but a strict guard should be placed against the unlimited importation of those articles, for the manufacture and production of which we enjoy amply the means at home. The doctrine of a barter trade betwixt a poor and a rich community is perfectly impracticable. Is it fair, or is it possible, to place the industrious artisans and productive labourers in the British empire, on a level with Russian slaves or Polish serfs? and, until the means of payment be rendered equal in both communities, no mutual exchange of labour can be effected. The truth of this has been shown to demonstration by the experience of the real effect of the virtually free trade in grain with the continent of Europe, which has existed during the last four years. During that period, the elements, very unfortunately, had rendered very large importations of foreign grain absolutely necessary; and if any circumstance could have established a barter trade with those communities from whence this grain has been received, an excellent opportunity has been thereby, to say the least of it, neglected, for the production of this presumed great good. During the continuation of these four years we must have remitted to foreign nations from twenty-five to thirty millions sterling in the precious metals in payment for grain; and yet during the same period the exportation of British merchandise to the foreign states from which this food was imported, has annually declined both in quantity and also in value. And in fact, this is a very natural consequence of the increase to their wealth which their late, and indeed we may now say present, connections with the United Kingdom has conferred on them. They have employed, and now are employing the specie which they have already, and now are receiving from us in payment for their agricultural produce which we have consumed; not certainly in the purchase of Manchester manufactured goods, nor in that of any article in the production of which the British labourer or the British colonist is interested, but much more naturally, and much more beneficially to themselves, in encouraging the industry of their own countrymen, in extending their manufactures at home, and in the improvement of their own fields. The more money we are compelled to remit to poor nations, the less need will they have for any description of our manual labour; and, until they become as rich as ourselves, to talk of a barter trade with them approaches near indeed the *argumentum ad absurdum*. Had the elements during the last four corn seasons, been widely different to what they have been, had agricultural produce been only abundant, and the quality of the grain fine, we would have had no occasion for foreign supplies of food. The thirty millions sterling remitted to foreigners for agricultural produce, and now very properly employed by them in extending foreign manufactures, and in improving foreign fields, would have been distributed amongst our farmers at home, and would by them have been paid away amongst the manufacturing and productive classes at home, until the benefit penetrated all ranks in the British empire. This sum would, by proper application of it to works of utility, have largely increased the demand for labour at home, and would thereby have materially added to the value of the wages of industry generally. Waste lands would have, under its influence, been reclaimed from their present state of unproductiveness, and rendered eminently useful to the British community. Manufactures and commerce generally would have flourished by means of the increased consumption of all articles useful to mankind, which agricultural prosperity would have occasioned, and no cry of want would, at the present moment, have been heard amongst the people, unless amongst those who may be unwilling to perform their labour for any wages which might be offered to them. We have most repeatedly had occasion to direct the attention of our readers to the universally acknowledged fact that within the United Kingdom are easily to be found the means of vastly increasing the quantities of agricultural produce of every description now grown there; and that the application of capital, and fair protection to those who apply their money, talents, and experience for these purposes, against the competition in our own markets of articles of similar description, but produced in foreign states, are alone necessary for the acquisition of great national advantages. Under even numerous disadvantages, the science of agriculture has been heretofore, under the late corn laws, annually on the increase; and were due encouragement hereafter only held out to experimental operations, within a few years there is not one acre of land, however highly it may be at the present moment cultivated, which would not yield one-third or one-fourth more of agricultural produce than can now be extracted from it. Besides, within the United Kingdom, are to be found at least fifteen millions of acres of land, now entirely useless to the human race, but which are more or less capable of being brought forward into a state of progressing cultivation, and of being rendered highly useful to her Majesty's subjects generally; but protection to capital so invested, and protection to the produce of that capital in our own markets, are absolutely requisite for obtaining these benefits. Thus it becomes obvious that the British empire is perfectly capable of maintaining twice, or even three times, her present population, without on any occasion requiring the smallest assistance in the way of food from foreign communities; and therefore abundance of productive employment to all classes must be the necessary consequence of a partial departure from the free trade system, and of a return to that real road to the wealth of nations whereon internal industry is fostered and protected, and by which the labour of our own population is preferred to that of foreigners. The doctrine that the wages of labour are independent of the value of the necessaries and of the luxuries of life, would, under these alterations in our internal polity, be speedily exploded. Nobody would then entertain the absurd idea that the cheaper the prices of agricultural produce may be, the higher must be the wages of labour. Prosperity at home alone can furnish the means of effectively employing the people, and when agriculture is in a flourishing condition employment becomes more plentiful, and workmen consequently more valuable. It is by purchasing our food from home producers, and not from foreign nations, that a clear field can alone be opened to British and Irish industry. We are now suffering from the effects of three or four bad corn seasons, which rendered the purchase from foreign nations of a considerable portion of food for our consumption absolutely necessary. The alteration made in the corn law during the last session of parliament we greatly fear must mainly contribute to perpetuate this unfortunate state of things, for it is entirely out of the question that English agricultural labourers can compete in cheapness with the slaves of Russia, with the serfs of Poland, with the boors of Germany, or even with the helps of the United States of North

America. The cause of this is most obvious. An Englishman dresses himself in the manufactures of Leeds and of Manchester, and lives generously, whilst the foreign agricultural labourer is rich indeed if he can afford to cover his body with a sheep's skin, and feed himself on the worst description of bean or rye bread. Our liberal laws, however, must eventually tend to raise to independence the foreign agricultural labourer from his present state of deep depression, at the expense, we say, not of the British agricultural labourer, for, under all circumstances, he can, at all events, maintain his family and himself, but of the British artisan and operative; who, should the ministers persevere in the principles of free trade, must find both the home and export markets for the consumption of their handicraft miserably curtailed, and their productive employment at home no longer possible. By our commercial liberality we are at present enabling foreigners to extend their manufacturing operations, and to increase their agricultural improvements. We are raising up in our former continental markets for the consumption of some portion of the surplus of our goods foreign manufacturers, who will speedily compete with us in quality, and far excel us in cheapness. This is the consequence of the ruin which the corn law leagues have attempted to entail on our agricultural interest, and the evils of which have most unfortunately fallen on the cotton lords themselves, who have now no means for the profitable pursuit of their own undertakings than by reducing the wages of their artisans and operative workmen to effect a reduction in the expenses generally of their establishments. By their more than insane hostility to the landed interest they have in a very material manner injured the home market for the consumption of their goods, and by similar conduct they are now encouraging the growth in foreign European markets of foreign manufactures, with which even already they are entirely unable to contend, particularly in cheapness. Hence arises the general distress in the manufacturing districts which so widely and so unfortunately exists at the present time, and for which there is no other remedy than a speedy return to our former advantageous system of protection generally to every department of British industry, whether it be agricultural, commercial, or manufacturing. Times would have been far different indeed with those unfortunate men, had the old saying of "live and let live" been the motto of their employers. To them, under the late corn law, it did not signify whether bread was two pence or three pence per lb.; for that price, whatever it was, was paid to the cultivators of the soil, who afterwards put it into circulation amongst the productive classes, and thereby regulated the value of wages. A portion of the price now paid by English manufacturers for bread is under the new corn law, however, now weekly remitted to foreigners in payment for foreign wheat, and this money is embarked forthwith in foreign factories with the view of improving the quality of foreign goods—of underselling our manufactures in foreign markets, and for some articles even excelling us in our own markets. Had the corn law been permitted during the last session of parliament to have remained without alteration, a prospect at all events of commercial amendment would now have existed, arising out of the appearances in the corn fields. The weather has been extremely favourable for ripening and gathering the wheat crop, and, in as far as any opinion can yet be ventured on the subject, the quality probably will be uncommonly fine and weighty. This fortunate circumstance, if it prove to be correct, must, in a very material degree, make good the deficiency in quantity which no doubt does exist to a certain extent, and the present wheat crop may thereby after all be rendered nearly an average one. The farmers, however, will find that they must contend with at least one million and a half of quarters of foreign wheat and flour in our own markets until at all events the turn of the year, and for weeks past sales have consequently been exceedingly difficult even at declining prices. This is an evil, however, arising from the late alterations in the corn laws, to which our farmers must submit, and from which the great body of consumers cannot reap one solitary advantage. An abundant produce of wheat at home, under the old corn laws, would soon have been attended by a revival of trade, for it would have, in a short period, rendered the remittance of money to foreign nations in exchange for food entirely unnecessary; indeed, we may almost say, impossible. By the former law, when the crops were good at home, British agriculture was to a certain degree protected from foreign competition in all our markets of consumption; but the present law holds no adequate protection to it whatever, for at the maximum duty of 20s. per quarter on wheat, we shall continue to receive annually large supplies of foreign wheats, whatever may be our prices. When the average value of wheat declines here to 50s. per quarter, the value of the best description of Polish wheats will universally be from 6s. to 8s. above our average. This difference will pay in part, at all events, the highest importation duty, and purchases will be made in Elbing, Dantzig, and in the other shipping ports in the Baltic, proportionably low, leaving enough not only for the payment of the remainder of the highest import duty, but also for the fair profit of the speculator. The wheat importers during the last twelve months, however, did not calculate, in their original operations, on the effects which the wonderful change for the better in the weather, during the last ten weeks, has had on the value of wheat in this country, and accordingly the sacrifice of property in the sale must in every probability be considerable. To the Chancellor of the Exchequer, however, the present state of the foreign corn trade is at all events of considerable importance, in as far as the revenue must be increased by upwards of one million sterling this season by the corn duties. Had the minimum duty chargeable on foreign wheat been fixed by the law at 7s. per quarter or so, then every farthing of this large amount of duty would have been paid, and that cheerfully too by the original foreign proprietor; but as it is, we fear much that the greatest part of it must, under the present corn law, fall on the British proprietor, who, calculating on the payment of only 1s. per quarter of duty on wheat, paid much too dear for it in their purchases abroad. This is a very material defect in the corn law, for the foreign land proprietor ought to pay at least a duty equal to the direct and indirect taxes with which our farmers are charged on that part of his agricultural produce which is imported into, and consumed in this country; and it is to be presumed, therefore, at all events that such an alteration will be made in the corn law, when the parliament again assembles, as will be sufficient to remedy this most palpable defect in its present construction; for prices abroad are, we may say, universally regulated by those expected to be obtained for foreign agricultural produce in Mark-Lane. By the latest intelligence received from all the large ports of shipment within the Baltic Sea—and the letters are in due course of post—we consequently find that wheat had declined there in proportion, at all events, to the fall which had previously occurred here in that article. A still more material decline, however, may be most reasonably looked for in all these places, because the English is the only market at present to which wheat can be forwarded with any fair prospect of profit; and the last quotations from Dantzig, in particular, were still considerably too high for the attainment of this object. Speculators, however, were not to be restrained in their operations by the great change which had occurred every where in the weather, for purchases of wheat to a considerable extent continued to be made for immediate shipment to the United Kingdom, at prices which an advance in value in Mark-Lane alone can render profitable. Here, however, a great quantity of wheat must come before the close of this year, from the Baltic Sea, and not one additional bale of British manufactured goods will be received by the proprietors of that wheat in exchange for it. Money must be remitted, and that money will be embarked in the improvement of foreign agriculture, and in extending foreign manufactures, and foreign commerce of every description. At Rostock, Stettin, and all the other ports near the mouth of the Baltic sea, the letters received announce dull markets and declining prices. The best qualities of wheat were, however, held at prices out of proportion to those in Mark-Lane. For instance, red Silesian wheat could not be put free on board under 44s. per qr., and 48s. was the price demanded for the best samples of white. The last information received from Altona and from Hamburgh represent the wheat trade as being in a state of perfect inactivity, and sales were with great difficulty effected, even after a considerable reduction in prices had been submitted to. Yellow Silesian wheat of about 59lbs. per bush. had been offered free on board at 34s., and ordinary Magdeburgh and Saxony of about the same weight could have been then put on board at 2s. per qr. less; indeed, should any further decline in the value of agricultural produce occur here, it must be followed by a corresponding fall throughout all the corn markets in Europe. This we find to be generally the case already throughout all the corn districts in the Mediterranean, Adriatic, and Black Seas, in as far as the news of the improved prospects of the crop in Great Britain had reached them. At Marseilles very little business could be effected in bonded wheats, although the wheat crop in that part of France did not yield nearly so much produce as had previously been anticipated. In the lower ports in Italy a considerable degree of stagnation also prevailed in the corn trade, and in the rates of freight to England some depression had taken place. Still few were induced to enter into speculative purchases with a view to the British markets, even at the reduction in freights and prices which had occurred. From Trieste, Ancona, and the several shipping ports in the Adriatic, the information latterly received is of a similar description. The wheat crop was well spoken of, but still no material additional decline in prices was anticipated when the new wheat would be brought forward into the markets for sale. Egyptian beans were however in some demand, at Trieste in particular, for England, and a few small vessels were loaded during the last month with that article. At Odessa the transactions which had occurred in grain, have latterly been entirely without interest. They have been extremely limited in their extent; indeed the voyage is so long, and the chance of heating consequently so considerable, that, unless under very peculiar circumstances, even low prices do not tempt British speculators to embark their capital in such hazardous undertakings, as in a corn voyage to London from the Black-sea. From the United States of North America the letters received come down to the middle of last month, but they communicate little information respecting the corn trade either of interest to corn speculators here, or of importance to the consumers; the growth of wheat continued to be well spoken of every where. It is represented as being abundant in quantity, and superior in quality. The alterations in our corn-law, and the reduction of the import duties on various articles of American agricultural produce, were considered acts of material consequence to the future prosperity of the inhabitants of that Union. A considerable and a valuable trade was anticipated in the exportation of cured provisions of various descriptions to this country. This is a new channel of trade, which every year must increase in magnitude and in value; but it will be done at the expence of our breeders and feeders of cattle and hogs chiefly, and eventually must be seriously injurious to the great body of consumers themselves. In none of these letters is even a hint given that reciprocity in commerce betwixt Great Britain and the United States will be the consequence of our liberality. No reduction of the extravagant duties now charged on various articles of British products was even contemplated at these dates.

Like their former loans of money, our transatlantic brethren intended to turn every thing to their own advantage. They have materially heretofore improved their country with English money, of which they now refuse to pay the annual interest. On loan therefore they can get no more money from Europe for internal improvement, but our liberal laws open to them a new channel for money getting in the British Empire. The Americans are a young, and consequently a selfish people. In their protection, however, to internal industry they are a wise nation. They naturally, unlike our new system of liberality, prefer the productive employment of their own countrymen to those of foreign communities. They accordingly seem inclined to avail themselves of all the commercial advantages we have latterly placed before them, but, at the same time, they express a determination to protect their home manufactures by almost prohibitory duties imposed on the importation of goods the manufacture of the United Kingdom. We hear no longer of an exchange of American agricultural produce for British manufactured goods. We have altered our Corn Laws and our Custom-house duties with a view to reciprocity in trade, but the Americans most wisely continue to protect their own industry, and to avail themselves of all the facilities to trade afforded to them by foreign nations. Accordingly, considerable shipments of flour were making, at the latest dates, chiefly to our West India colonies; and in this privilege no small degree of injury is done to our farmers at home, who are compelled to consume colonial sugar alone, and who have therefore a claim on the colonies for any additional quantity of food, over their own production, which may be requisite to their consumption. To the British possessions in North America also, wheat in considerable quantities continued to be shipped for the purpose of being converted into Canada flour, and to be imported into the United Kingdom on the payment of the colonial corn duties. One advantage to the British consumer may arise from this practice. For years past the flour received here direct from the United States of America has been so much adulterated with mixtures of India corn and other inferior articles, that it has got for itself a bad name, and few of our bakers have felt any inclination for years past to use it, unless at very reduced prices. The Canada millers possibly may divest it in future of this deterioration in its quality. From Halifax the information received, since our last publication, is down to the 17th ult., and the dates from our American possessions are in accordance with that time. The grain crops everywhere continued to be favourably talked of, and the exportation of the surplus of them to this country will, most probably, be very extensive. A considerable number of ships have been chartered here for the conveyance of flour and wheat from British America to this country, and the greatest portion of them have proceeded on the voyage in ballast, so urgent is the demand there for them at this late season of the year. Upon the whole, the prospect of the wheat trade at the present time is by no means cheering to the farmers of the United Kingdom. In every probability, dull markets and drooping prices must be contended with by them during the remainder of the present year. In many cases they will be compelled to sell at all events a part of their present crop for the purpose of raising money to meet their current heavy expenses; and in doing so they will be met in their own markets with large quantities of the finest wheats of foreign growth. This is not a proper position in which the agricultural interest—the most valuable, and certainly the most important one in the British empire—should be placed at this season of the year; nor can any reduction in the value of the necessaries of life, originating in such circumstances, eventually be of the slightest advantage to the great body of consumers within the United Kingdom. It, however, has been the pleasure of our modern legislators so to form our laws, and it only remains therefore for the people to submit to them, however extensive the sacrifice to be made by them may be, and however much the value of labour and the prices of food may be reduced by this peace-offering made to foreign nations.

During the last month the Barley trade has been entirely without public interest, and the business transacted in it so exceedingly limited in its amount, that it is difficult to mark any material alteration in its value. The best samples have been disposed of at from 28s. to 32s. per quarter, and inferior qualities are proportionally low. Considering the unfortunate manner in which the last harvest was gathered, these prices cannot remunerate the home barley grower, and yet foreign barley is permitted to interfere with him in our markets of consumption, and materially to reduce the value of his property. The crops of this article this season many think will be of very superior quality, but in quantity less abundant than usual. The farmers, however, feel less and less inclined to increase barley cultivation, because the consumption of it in legitimate channels is annually now decreasing, and also because the state of the law of importation must for the future prevent this description of cropping from ever being a very profitable one. It has often occurred to us that the smallest recompense which government could make to the agricultural interest, for the damage done to them by the large reduction which has lately been made in the amount of the import duties on foreign grain, would be the application of the duties levied on foreign grain to agricultural purposes at home. Before the conclusion of this year, upwards of one million sterling will have been paid into the Treasury from this source only. Now in the last financial statement of the first Minister of the Crown, no calculation of increased revenue drawn from foreign corn duties was made, and therefore whatever its amount may be, it is positively an unlooked-for and unexpected addition to the public income, which had previously very fully provided for the public expenditure without this addition to it. As this increased revenue has been obtained chiefly at the expense of the agricultural interest, and as the Chancellor of the Exchequer has plenty of money for the payment of the public expenditure, this sum, drawn from foreign grain entered here for home consumption, should, in common justice, be applied to the reduction of the monstrous duty now charged on malt. It is equal to 5s. per quarter of the duty now charged on malt, and even a reduction to this extent would be of considerable consequence not only to the barley grower, but likewise to the community at large. This would be a beginning, at all events, of a most important improvement in our system of taxation; and the advantages which would arise from it would speedily lead to the adoption of the great finance principle, that a moderate system of taxation universally increases the amount of money paid into the treasury; whilst outrageous rates of duty as universally produce a contrary effect. The malt duty has, for years now, afforded abundance of evidence on this subject. At 34s. 10d. per quarter it never paid, even in paper money, three millions sterling into the treasury. The second year after the duty was reduced to 20s. per quarter, six millions of quarters of barley were converted into malt; but the malt duty has been again increased, and from this and other obvious causes the public brewers now consume annually less than four millions of quarters of malt. It is most easy to see that, even if strong beer was drawn from the whole of this quantity of malt, when divided amongst nearly thirty millions of human beings, it is not one-third of what should be the natural consumption. By reducing the malt duty to moderation—by fixing it, for instance, at 1s. per bushel, more duty eventually would be paid into the treasury from this article, and the consumption of beer would be tripled. This would be, however, only the smallest part of the benefit: it would give employment and wages to three times the number of agricultural labourers now employed in the barley fields; it would render the great body of the people perfectly contented with their condition and lot in life, and it would improve the value of land by causing the cultivation of two millions of acres of land, in addition to the quantity now under barley tillage, which are at present in a state of nature, and, unless in the production of rabbits, are entirely useless to the inhabitants of this country. The wealth of the commonwealth would likewise be materially improved; for the additional land which would be required for this purpose, and the additional productive labour which its cultivation would require, would far more than pay for the additional consumption of barley which the reduced rates of duty charged on malt would from necessity occasion. Instead, however, of applying the pruning knife to various articles, the manufacture of which at home is restricted very considerably by our excise laws, the attention of our finance minister has been exclusively directed to the reduction at our Custom House of the duties on numberless articles imported here from foreign nations, and in the production of which foreign workmen alone find employment. It is now, for instance, proposed to reduce the duties now charged on French brandies to one-half of its present amount, whilst the reduction of the heavy duty now charged on spirits manufactured in England is not even hinted at by any of our modern statesmen, although, for the improvement of public morality, an alteration in this charge is absolutely necessary. These high duties are also injurious to the purposes for which they were enacted, in as far as they encourage the illicit importation of Spanish, French, and of foreign brandies, manufactured from the worst materials, and distilled on the worst principles of that art. The duties levied on home-made spirits should be equalized throughout the United Kingdom. In Scotland and Ireland, the increase of the present charge to 5s. per gallon would not re-introduce the trade of the smuggler into either of them; whilst the reduction of the duty now charged in England to the same figure would, in a short period indeed, render the smuggling trade not profitable here, and would consequently place it in a rapid state of decay. By a financial operation of this description, the public morality and the public health would be much improved, and the public revenue would be very materially increased. It would also require at least half a million of quarters of barley to supply the quantity of spurious spirits now annually smuggled in this country, by the growth of which additional quantity of barley a considerable annual increase would be made to the wealth of the community in general.

The Oat trade likewise, during the last month, has participated in the general depression, and the previous value of this article has scarcely been maintained. The supplies of British growth have been moderate, but from Ireland the arrivals have been large. The quality generally, however, has been very inferior; and this circumstance has kept the average prices low, and prevented that reduction in the import duties to that low point, on which the importers of this article from foreign nations calculated when their purchases were effected. The quantity, however, received from abroad, since our last publication, has been very considerable; but the quality has been generally superior to the vast proportion of the samples in the market of the home growth. They have, therefore, in many instances commanded the highest prices quoted in the markets of consumption; which, however, have not been sufficiently dear to prevent the speculator from incurring a considerable loss on those sales which they were able to effect. This evil, however, will find its remedy in the future foreign importations of this article; for prices abroad will eventually find their level with those to be obtained in the British markets, and the quantity to be yet forwarded to us must, in every probability, be large. Now, no legitimate reason whatever previously existed for reducing the Oat import duties—for the annually increasing shipments made from Ireland have been abundantly large for some years back—to keep the value of them moderate in Great Britain; indeed, too much so for the real interests of their home producers. To the cultivators of the Irish soil, the alterations made during the last session of parliament in the duties payable on the importation of foreign Oats, will be even more prejudicial than to the oat growers in Great Britain; in so far as they, in a material degree, depended for the success of their agricultural improvements on obtaining in Great Britain remunerating prices for their crops of oats. The alteration in the corn-laws, however, partly in future must deprive the farmers in Ireland of the prospect, at all events, of this important advantage; and thus, to a certain extent, interfere with their agricultural operations. Under the former law the oat grower had some protection, at all events, against the foreign oat grower; and consequently the lands in Ireland were in a continual state of annual improvement. The people also then were gradually obtaining better pay for their labour, and were becoming more settled in their habits in life. The increasing cultivation of the fields prevented for several years that influx of Irish labourers which had previously been so heavily, and at the same time, so justly complained of by the agricultural labourers in Great Britain. But now the same inducement to prosecute these most important and patriotic improvements in Ireland exists not. In fact, the Government has transferred from Ireland to the continent of Europe, the supplying of the English markets with that quantity of oats which the reduced production of this article in Great Britain had previously rendered necessary, and all the former evils which protection to agriculture had nearly removed, must by the free trade principle be again restored. In many former publications we have shewn that even the maximum duty now imposed on the importation of foreign oats, can be no adequate protection to the Irish oat grower; for the difference in freight, charges, and in quality, generally is more than equal to the highest duty now chargeable on foreign oats; and the ultimate consequence must be that we must employ foreign fields, foreign labourers, foreign ships, and foreign seamen for the production and for the importation into Great Britain of that quantity of oats which the consumption requires over the home production, instead of encouraging the improvement of Irish fields, the productive employment of Irish labourers, and patronizing British ships and British seamen. A still more injurious consequence, however, must result from this alteration in our corn-laws; for the foreign oat supplies, the foreign ships, and foreign seamen, must be paid for in the precious metals, and not in manufactured goods, as would be the case had the Irish oat trade received due encouragement.

This country certainly never produced a larger crop of potatoes, nor a superior one in quality, than that of this season. All the large towns have been already most abundantly supplied with this important article of agricultural production, and now of general consumption also, and prices have never been more moderate. Potatoes now may be universally considered, even in England itself, as second to wheat alone in general usefulness to the community at large, and an abundant and superior crop of this article it is very satisfactory to us to be enabled to report, under the present circumstances of the country. This fact may materially tend to give confidence to the people, which eventually must lead to a better feeling amongst them, and may be the means of restoring, in some degree, prosperity to the manufacturing and to the commercial interests of the United Kingdom; for public confidence is far more valuable to industry than, we may almost say, is money itself. Actual want, at all events, can be experienced by no class in society so long as this root can be obtained at moderate prices, and most fortunately this will probably be the case in the United Kingdom now for twelve months to come.

In the Pea and Bean trade the operations during the month have been interesting. The supply of both has been quite equal to the consumption, and the fluctuations which have occurred in their prices have been perfectly trifling. The fine weather very naturally renders the quality of this season's growth, of both of these articles, fine; and on the whole pulse most probably will be an average crop, if the weather does not materially change before the conclusion of the harvest time.

CURRENCY PER IMP. MEASURE.

Aug. 29.

	Per Qr.			Per Qr.	
Wheat, Essex and Kent, red ..	48	52	White..	54	58
Irish	46	—	Do.	51	53
Old, red	—	—	Do.	—	—
Rye, old	34	36	New....	36	38
Barley, Grinding 26 27 Malting	28	30	Chevalier	28	32
Irish........................	23	25	Bere . 20	21	24
Malt, Suffolk and Norfolk	56	62	Brown..	50	54
Kingston and Ware	56	62	Chevalier	63	—
Oats, Yorksh. & Lincolnsh., feed	23	24	Potato..	25	26
Youghall and Cork black	17	18	Cork, white	19	20
Dublin	17	18	Westport	19	—
Waterford, white	16	17	Black ..	17	—
Newry	21	—			
Galway	12	15			
Scotch feed	22	—	Potato..	24	—
Clonmel	20	22	Limerick	17	20
Londonderry	20	22	Sligo ..20	22	23
Beans, Tick, new..................	32	34	Old ..35	40	44
Peas, Grey	33	34	Maple..	—	34
White	35	38	Boilers .	37	39

Seed, Rape...... 36*l*. 40*l*. Irish..32*l*. 34*l*. per last.
Linseed, Baltic....44 48 Odessa 50
English Red Clover.... — — per cwt.
White .... —
Mustard, White 15 — brown 15 16 per bush.
Tares, old .... 28 30 new 36 44 per qr.
Flour, Town-made .. 47 Suffolk 38 — pr sk. of 280 lbs
Stockton and Norfolk, 38 —

FOREIGN GRAIN AND FLOUR IN BOND.

Wheat, Dantzic	44	—			
Barley	20	—			
Oats, Brew	15	17	Feed ...	14	16
Beans	20	22			
Peas	23	27			
Flour, American, per brl......	20	22	Baltic ..	20	—

IMPERIAL AVERAGES.

Week ending	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
July 16th	65	8	28	0	22	0	38	6	34	10	35	5
23rd	65	4	27	10	21	6	36	5	35	1	34	0
30th	63	9	28	0	21	5	34	9	34	7	33	10
Aug. 6th	61	3	27	6	20	6	35	11	34	1	32	11
13th	58	11	27	6	20	2	35	6	34	1	34	7
20th	56	5	26	9	19	5	32	9	33	8	33	11
Aggregate average of the six weeks which regulates the duty	61	10	27	7	20	10	35	8	34	5	34	2
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London ..	11	0	9	0	6	0	7	6	8	6	8	6
Do. on grain from British possessions out of Europe........	1	0	1	6	2	0	0	6	0	6	0	0

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, August 26th, 1842.	s.	d.	AVERAGES from the corresponding Gazette in the last year, Friday, August 27th, 1841.	s.	d.
Wheat	56	5	Wheat	76	1
Barley	26	9	Barley	39	7
Oats	19	5	Oats	24	5
Rye	32	9	Rye	40	0
Beans	33	8	Beans	43	9
Peas	33	11	Peas	48	5

Account shewing the Quantities of Grain, Meal, and Flour, imported into the United Kingdom, in the month ended the 5th Aug., 1842; the Quantities upon which Duties have been paid for Home Consumption during the same month, and the Quantities remaining in Warehouse at the close thereof.

Foreign Grain and Flour.	Quantity imported.			Quantity entered for consumption.			Quantity remaining in warehouse.		
	qrs.	bush.		qrs.	bush.		qrs.	bush.	
Wheat, from British Possessions	3923	0		3923	0		459	3	
Peas, from do......	6491	6		7309	6		388	1	
Indian Corn, do....	....			19	0		804	0	
Wheat, foreign	386756	5		282174	0		1259991	4	
Barley, do.	9328	1		9343	7		80192	0	
Oats, do.	119781	3		92572	1		140411	7	
Rye, do.	1998	2		18	4		4565	5	
Peas, do.	6089	1		1665	4		46787	6	
Beans, do.	7006	4		1235	3		69362	5	
Indian Corn, do....	611	4		2921	1		6380	4	
Buck Wheat, do. ..	....			....			....		
	cwts.	qrs.	lbs.	cwts.	qrs.	lbs.	cwts.	qrs.	lbs.
Flour and Meal from British Possessions	97978	2	6	96152	2	0	11700	0	5
Flour & Meal, foreign	58980	3	15	101561	0	8	261389	0	17

PRICES OF SEEDS.

Aug. 29.

Rapeseed was held at fully previous terms, but there was not much doing in the article.

Quotations of Linseed remain nominally unaltered.

Mustard-seed was the turn dearer.

In Canary, Coriander, &c., we have no alteration to notice.

There was a large display of Tares, and we must reduce prices 6d. per bush.

Linseed, English, sowing	48	56				
Baltic	—	—	crushing	42	45 per qr.	
Mediter. & Odessa	45	46				
Large, foreign....	—	—				
Clover, English, red	—	—	white	—	—	per cwt
Flemish..........	—	—	do..	—	—	nominal.
New Hamburgh ..	—	—	do..	—	—	
Old do.	—	—	do..	—	—	
French	—	—	do..	—	—	
Hempseed, small........	35	38	large ..	46	48	
Coriander..............	10	16	old....	16	18 per cwt.	
Mustard, brown, new ..	10	11	white..	10	10s 6d p. bush.	
Trefoil, new............	18	22	old....	12	16	
Rapeseed, English new..	30*l*.	32*l*.				
Rye Grass, English......	30	42	Scotch	18	40	
Tares, winter	—	—	New..	5s 6d	6s 6d	
Canary, new............	75	80	fine	80	85	
Carraway, old	—	—	new	42	44	
Linseed Cakes, English..	10*l*. to 10*l*. 10s.					
Do. Foreign..	7*l*. to 7*l*. 10s.					
Rapeseed Cakes........	5*l*. 5s. to 6*l*. 0s.					

PRICES OF HOPS.

BOROUGH, Monday, August 29.

The arrivals as yet have not been sufficient to enable the dealers to do a large business, but it is calculated that upwards of 40 pockets of the new crop have been brought to market from mid. Kent and Sussex. Kent pockets have realised 6*l*., and Sussex 5*l*. 5s. to 5*l*. 12s. per cwt. The general duty is calculated at 145,000*l*. to 150,000*l*., and the Worcester duty is backed firmly at 18,000*l*. The picking is going on well, but the rain, if it continues, may prove an interruption.

MAIDSTONE, Aug. 28.—Hopping commenced in this district on Friday, and will be general on Monday, the favourable weather having brought the Hops fast to perfection. There being a great deal of condition in them, it is expected they will weigh well, and be of very superior quality. In the immediate neighbourhood from 5 to 6 bags per acre will be realized. Yalding, one of the largest parishes, is improving; and Wrotham, a very large parish, is very good; from 15 to 25 cwt. per acre is expected there in many grounds. The Farleigh's, Hadlow, Mereworth, and Wateringbury, all look well. The Weald of Kent has improved; we may therefore add ½ cwt. per acre in the calculations of last week to the Canterbury district. We have also added ½ cwt. per acre to the Worcester district, as the accounts from these are more favourable.

Districts.	Number of Acres.	Suppose they grow per Acre			The Duty would be
		cwt.	qr.	lbs.	
Rochester	12,487¾	9	0	0	54,322
Canterbury ...	9,206½	6	2	0	28,921
Sussex	10,142¾	8	0	0	39,215
Worcester....	9,880¾	3	2	0	16,713
Farnham	2,761¼	6	0	0	7,965
Kingdom ...	1,290 9-16	5	0	0	3,117
	45,769 9-16				£150,253

PRICES OF MANURES.

Subjoined are the present prices of several sorts of manure:—

Bone-dust, 21s. 6d. per qr. of 8 bushels
Half-inch Bones, 21s. 6d. per qr. do.
Rape-dust, 24s. per qr. do.
Rape Cake, 6*l*. 6s. per ton.
Rags, 4*l*. to 4*l*. 10s. per ton.
Graves, 5*l*. to 5*l*. 10s. per ton.
Gypsum, 38s. per ton.
Salt, 2*l*. 0s. dirty, 2*l*. 15s. clean, per ton.
Soap ashes, 10s. per ton.
The Urate of the London Manure Company, 5*l*. 0s. per ton.
Hunt's New and Improved Artificial Manure, 13s. 4d. per qr.
Willey Dust, 4*l*. 4s. per ton.
Artificial Guano, 15s. per cwt.

WOOL MARKETS.

BRITISH.

AUG. 29.

Down Ewes and Wethers........	10d. to 10½d.
Down Teggs	11d. to 12d.
Half-bred Wethers	10d. to 11d.
Half-bred Hogs	12d. to 12½d.
Flannel Wool	8½d. to 12d.
Blanket Wool...................	5d. to 7½d.

LIVERPOOL, August 27.

SCOTCH.—There continues to be a very limited demand for Laid Highland Wool at former rates; the consumers are looking forward for the arrival of some new. White Highland is more inquired for, but little at market. There has been a little more inquiry for good Crossed and Cheviots at our former quotations; inferior is quite neglected.

	s.	d.		s.	d.
Laid Highland Wool, per 24 lbs..	6	9	to	7	0
White do. do............	9	0		9	3
Laid Crossed do..unwashed..	8	0		9	0
Do. washed do...............	8	6		9	9
Do. Cheviot unwashed do.	8	3		9	9
Do. washed	11	6		14	6
White Cheviot, washed	20	0		21	0

FOREIGN.

CITY, Aug. 29.—The operations in the Wool marmarket have been to a moderate extent. During the past week the imports of Wool into London have amounted to 1,875 bales, of which 1,185 bales were from Sydney, 583 from Germany, 14 from Russia, 6 from Ostend, and 87 from Spain.

From the Continent our advices just now respecting the Wool trade are devoid of general interest.

Accounts from Paris of Monday state that although the holders of Wool had reduced their prices, they were still too high to induce the manufacturer to purchase. This remark applies both to combed samples and to Wool in the fleece.

PRICES OF SHARES

No. of Shares.	Div. per Ann.	IRON RAILWAYS.	Price per Share.
6,300	1*l* 4s p.c.	Birmingham & Derby ..100*l* sh pd	
6,300	8s	Do. Thirds, iss. 8⅛ dis. 33⅓*l* sh 25*l* pd	13⅜
9,500	3*l* per ct	Do. and Gloucester ...100*l* sh pd	
10,000		Do. New, iss. 7½ dis. 25*l* sh 17½*l* pd	
15,000	4*l* per ct	Bristol and Exeter..100*l* sh 70*l* pd	43¾ a 4
7,500	2*l* 10s	Cheltenham & Great Western 100*l* sh 80*l* pd	
3,000		Clarence...............100*l* sh pd	
64,000	18s p sh.	Eastern Counties ....25*l* sh 23*l* pd	
		Ditto New............6*l* 6s 8d pd	
64,000		Ditto Debentures .. 8*l* 6s 8d sh pd	
12,500	3½*l* per ct	Glasgow, Paisley, and Ayrshire 50*l* sh pd	
5,000		Edinburgh, Leith and Newhaven, 20*l* sh pd	
18,000		Edinburgh & Glasgow .. 50*l* sh pd	49 a ½
18,000		Ditto New..........12½*l* sh 3*l* pd	3⅛
16,000		Glasgow, Paisley, and Greenock, 27*l* sh 25*l* pd	
10,918	10*l* per ct	Grand Junction........100*l* sh pd	
11,000	5*l* per ct	Ditto Half Shares ......50*l* sh pd	
10,000	5*l* per ct	Great North of England.100*l* sh pd	
25,000	4*l* per sh	Great Western .... 100*l* sh 65*l* pd	85 a ½
25,000	3*l* per sh	Ditto New...............50*l* sh pd	61 a ½
37,500	5s per sh	Ditto Fifths..........20*l* sh 4*l* pd	8
		Ditto Bonds....1849	
		Ditto Bonds 1850, Letter C	
2,000	8*l* per ct	Hartlepool............ 100*l* sh pd	
8,000	3*l* per ct	Hull and Selby .... 50*l* sh pd	
2,100	5*l* per ct	Leeds and Selby........100*l* sh pd	
5,100	10*l* per ct	Liverpool & Manchester.100*l* sh pd	
7,968	10*l* per ct	Ditto Half Shares......50*l* sh pd	
11,475	10*l* per ct	Ditto Quarter Shares ..25*l* sh pd	
36,000	1*l*	London and Brighton....50*l* sh pd	33¾ ex-d
		Ditto Loan Notes....... 10*l* sh pd	10⅛ ex-d
48,000	1*l*	London & Blackwall Av. 16*l* 13s 4d	8¾ a ½
43,077	3s	London & Greenwich Av. 12*l* 15s 4d	5⅛ ex-d
11,136	5*l* per ct	Preference or Privilege Av. 18*l* 17s 2d	17¼
	5*l* per ct	Ditto Bonds (183,300)............	
25,000	10*l* p sh	London & Birmingh. 100*l* sh 90*l* pd	182 ex-d
25,000	2*l* 10s	Ditto Quarter Shares....25*l* sh pd	
31,250	3*l* 4s	Ditto Thirds............ 32*l* sh pd	59½ ex-d
	2*l* 14s	Ditto New.......... 32*l* sh 2*l* pd	30½ ex-d
		Ditto Bonds 1843	
46,200	3*l* per sh	London & South West. Av. 41*l* 6s 10d	63 a ¼
		Ditto Bonds 1842	
33,000	13s 4d p s	London & Croydon..Av. 18*l* 15s 9d	
2,000	3*l* per ct	Llanelly Railway and Dock 100*l* sh 70*l* pd	
13,000	4*l* 4s p sh	Manchester & Leeds 100*l* sh 70*l* pd	
13,000	1*l* 16s p sh	Ditto New Shares ....50*l* sh 30*l* pd	31½
	1s 8d	Ditto Quarter Shares........2*l* pd	
30,000		Manchester & Birming. 70*l* sh 40*l* pd	
		Ditto Extension......70*l* sh 7*l* pd	
10,000	3*l*	Midland Counties...... 100*l* sh pd	64 a 3
10,000	15s	Do. ¼ Shares, iss. 10 dis. 25*l* sh 15*l* pd	
15,000	3*l*	North Midland........ 100*l* sh pd	59½
15,000	1*l* 10s	Do. ½ Shares, iss. 10 dis. 50*l* sh 40*l* pd	28½
22,500	10s	Ditto Thirds, iss. at 11*l* 13s 4d dis. 21*l* 13s 4d sh pd	
10,256	2*l*	Northern & Eastern 50*l* sh 45*l* pd	38½ ex-d
72,000		Paris and Rouen ....20*l* sh 18*l* pd	
2,600		Preston and Wigan........20*l* pd	
4,000		Preston and Wyre......50*l* sh pd	
1,000	1*l* 15s	Sheffield and Rotherham 25*l* sh pd	
1,500	15*l* per ct	Stockton and Darlington 100*l* sh pd	
28,000	4*l* per ct	South Eastern and Dover 50*l* sh pd	22⅛ a 2
28,000		Ditto New, iss. 25 dis. 25*l* sh 10*l* pd	6⅜ a ⅝
6,700	10*l* per ct	York & North Midland..50*l* sh pd	88
6,700	10*l* per ct	Ditto New Shares.... 25*l* sh 20*l* pd	

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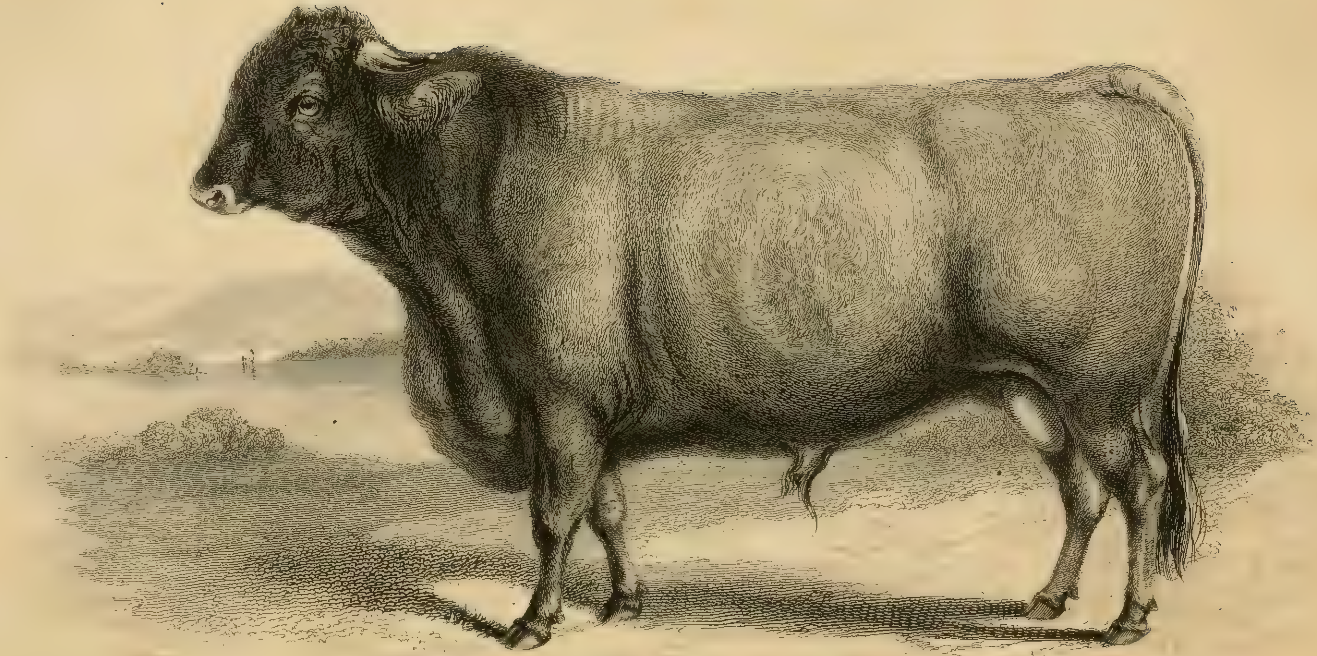
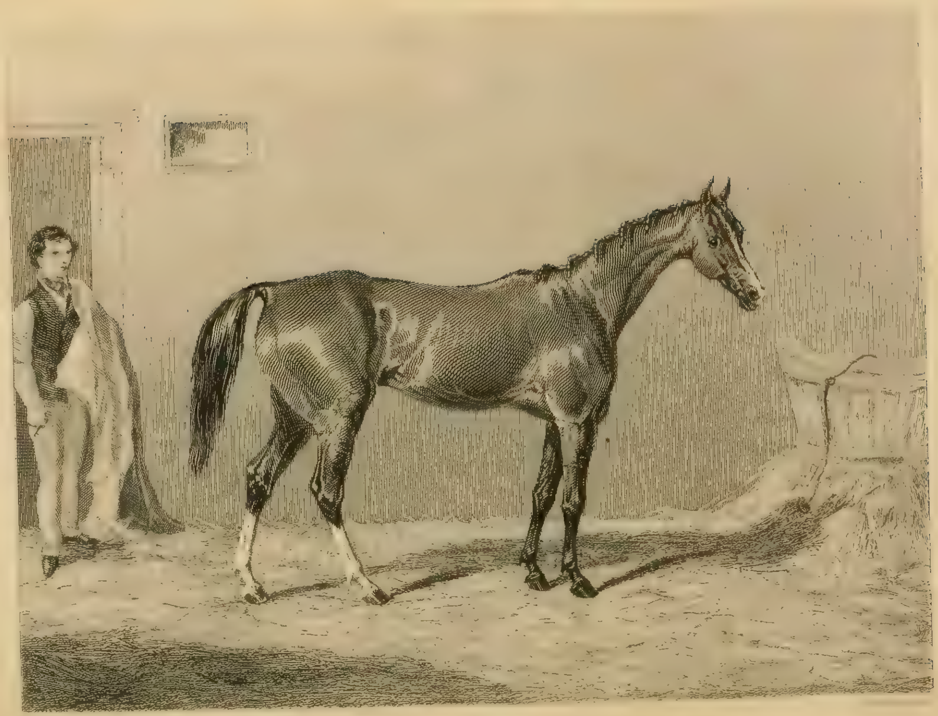


An Indian Bull

One of those imported by Sir G. S. Mackenzie Bart. of Conan House Dingwall Ross-shire N.B.



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THE FARMER'S MAGAZINE.

OCTOBER, 1842.

No. 4.—Vol. VI.] [Second Series.

PLATE I.

The subject of our first plate is a Swiss bull, imported by Sir F. Mackenzie, Bart., with a view, as he states, to improve our breed of cattle. The Swiss cattle are esteemed some of the best, if not the best, on the continent of Europe; and at this time, when so much attention will necessarily be directed to the character and quality of foreign cattle, we considered that a correct engraving of one of these animals would be interesting to the British Farmer.

PLATE II.

OUR NELL.

The winner of the Oaks, at Epsom, May, 1842, is a plain, cross-made, wiry-looking animal, but with strong points, particularly her hips, hocks, and thighs; and was bred by Mr. Marshall, in 1839, got by Bran, out of Fury (bred by Mr. Ridsdale in 1832), by Tramp, out of Lunacy by Blacklock, out of Maniac by Shuttle, Offas Dyke's dam by Beningborough, Expectation by Herod. For the Oaks Stakes of 50 sovs. each, 114 subs., she was ridden by Lye, and beat Mr. Shackell's chesnut filly Meal, who was also got by Bran, which must have a tendency to make him a more popular stallion; his produce running 1st and 2nd in a large field with an entry of 114 subscribers is not an every-day occurrence, even with the stock of our most fashionable blood-horses.

WHITFIELD EXAMPLE FARM.

INSTRUCTIONS RELATIVE TO THE TREATMENT AND MANAGEMENT OF HORSES; THE MODE OF WORKING THEM; THE MANAGEMENT OF THE PLOUGH; THE BEST METHOD OF PLOUGHING LAND; THE MANAGEMENT OF THE CART, &c.

1. The horse is a very teachable animal. He should be treated with gentleness, being much more easily taught to obey his keeper by being treated kindly, than by roughness.

By carefulness of him, and punctuality in cleaning and feeding him, he will soon become familiar with his keeper, and will then be easily brought to understand the orders given him. He should always be managed and directed by words, not by stripes. He will soon learn his vocabulary, which does not require to contain many words; the fewer indeed the better if they are distinct, and differ in their sound.

His name and four or five other words are all that are required, just so many as will enable you to order him to the right hand or to the left, to go briskly, to go slowly, or to stop.

If words and sounds be multiplied to him, and these not distinctly different in their sounds, he will be confused, and if punished it will be for his driver's fault and not his own.

It is most absurd to punish an animal for not doing as he is directed when he does not understand the orders given him. The language used should therefore be simple and uniform, and always the same.

Each man must be at the stables before five o'clock in the morning. His horses must be cleaned down and fed by half-past five, so that he may be in the fields by six. In these points the watch of the foreman is to be their guide.

On coming in at eleven o'clock, the hour at which they leave work *in the field*, each man must again feed his horses, and clean up the stalls. Their harness should be taken off during the interval, and they should be again harnessed before one, that they may be out in the field at that hour. At six the horses are again to be placed in the stable, and at eight they must be fed, cleaned down, and bedded. Their feet must be picked out with a foot pick, and cleaned, not by washing, but by brushing after they are dry, and the curry-comb must be used. Attention and punctuality should be strictly attended to in all these things.

2. In harnessing horses either to the cart or plough, the chief object should be to place them as near the point of resistance as possible. This, in the plough, may be a point situated somewhere on the mould-board side of the coulter, about half the depth of the furrow, under the surface of the ground; and that the object may be attained, the draught chain should be no longer than the length which the horses require, and the beam of the plough should be as short as is consistent with the length of the shear. The reason for placing the horses so near the centre of resistance is not only that we thereby enable them to exert their strength to greater advantage, but that we also give the ploughman greater advantage over them. These two things should be the objects aimed at, both by ploughmen in yoking his horses, and by the saddler in the construction of the various parts of his harness. The line of draught passes from the point of resistance through the muzzle or bridle of the plough to which the draught tree is attached, and in the same straight line to where the chains are attached to the back band, and from that to where they are attached to the collar: it thus makes an angle at the point of attachment with the back band. The back band should be placed on the horse at the second or third rib from his loins. Its use is to enable the ploughman, if he finds his implement going too deep or too shallow, by shifting it backwards or forwards, to give the line of draught a greater or less inclination, thus increasing or diminishing its tendency to pull the plough out of the ground.

By causing the line of draught to bend in this manner at the back band, an uplifting power is obtained which could not be obtained without it, the resistance is divided between the back of the horse and his shoulders, and his strength is thus rendered available in both directions. The shoulders, too, are not only eased of a portion of the strain, but that which remains is more easily borne; for were it not for this bend in the line of draught the pressure would come solely on the lower part of the shoulders, whereas it is by this arrangement distributed equally over the surface.

When the horses are yoked near the point of resistance, the man, as we said before, has a greater power over them—the surface too, if uneven, is ploughed with much greater ease at an uniform depth, as the man has not only his power increased in this way over his horses, but also over his implement. Another advantage attendant on this way of yoking, though one not perhaps of so much consequence, is that the horses are enabled to turn on a narrower head land.

3. During the time of working, the horses should always be kept at a good pace. An acre of land is ploughed with much greater ease when the plough moves along at the rate of three miles in the hour, than when it is drawn at the rate only of one mile in the same time. The resistance which a plough experiences in cutting and turning a furrow slice, is just a simple case of friction; it is this which the coulter and the shear (the cutting part of the implement) meet with, the one in cutting the depth, the other in cutting the bottom of the furrow slice, and the strain upon the mould board; the difficulty it experiences in turning the furrow slice after it has been cut, is owing to the same cause in the friction which it receives as the sod rubs over its surface in being turned over. Experiments on friction uniformly show that it is independent of velocity, that the resistance which one body gives to a force drawing it over another is the same whether the one surface be drawn over another a foot or a yard in a second; indeed some experiments would bring one to the conclusion that the friction diminishes as the velocity increases.

If then the plough be drawn three miles in the hour, the strain upon the horses is not a bit more than if it was only drawn one mile in the same time.

The only difference which they experience arises from the increased exertion necessarily attendant upon an increase of speed, which they would feel alike were they to quicken their pace when walking unattached to the plough. It is very evident that if horses lean against their collar with a force which would lift six cwt., they will not turn a furrow slice or move that which would require a force of six and a half cwt. to turn it.

In such a case as this the horses are exerting themselves almost as much, and will be as much fatigued with their exertions, as if they pulled with an additional force of fifty-six lbs. and drew the plough after them. It thus appears that a team may move sluggishly and be even stationary, and yet be no less fatigued than if it were to move along at a brisk pace, drawing the implement after it at the rate of three miles in the hour.

Any one who has compared two separate teams of equal strength in the plough, moving at unequal rates, when the equality of their work was insured by the uniformity of the soil, and the equal dimensions of their respective furrow slices, must be perfectly aware of the accuracy of what has been said. Did not that team which moved slowest appear to undergo the greatest difficulty in moving along? and did not that team which possessed greatest activity appear to do the work with the greatest ease? It is not in appearance only that this is the case; we think that the sluggish team, at the end of the day's work, is more fatigued than the other after doing less work.

This surely gives us a strong argument for the necessity of introducing more of what is technically called *blood* into the common breed of cart and plough horses. Activity and spirit are wanted, and a cross of the kind recommended would give these.

4. Having thus got our team harnessed and working briskly, let us enquire what means the ploughman has of regulating the depth and breadth he wishes to plough, and how he should use those means.

The plough may be made to go deeper by any of the following methods:—By shifting the back band nearer the shoulder; by lengthening the draught chain; or by raising the muzzle. All these act by rendering the line of draught more horizontal, thus diminishing the uplifting force which would raise the plough out of the ground. This object may also be attained by bending down the point of the shear, by carrying the stilts or plough handles, or by giving the coulter a greater inclination. All these act by giving the plough a better hold of the ground in front. Of all these plans the bending of the sock and the carrying the stilts are worst: the first because it deforms the plough, which is useless for shallow ploughing until it is again straightened at the forge; and the second because any force either up or down exerted by the ploughman, tends to increase the power of draught required to turn the furrow. The plough should be so regulated as to require no exertion on the part of the ploughman to keep it in its proper course. The harness and the parts of the implement connected with the bridle and muzzle, should be fixed so as to let it "swim fair." All these plans being to enable the plough to go deeper, the reverse of them must be had recourse to when we wish to plough shallow.

The breadth of the furrow is commonly regulated by altering the position of the ring to which the draft tree is attached on the bridle of the right, increasing or diminishing the breadth of plough, thus causing the coulter to move to the left or land as we shift the ring one or more divisions to the left or right. When, however, this mode of regulating the breadth of the sod is adopted, it causes the plough to heel over in some measure, like a boat when the rudder is used to keep it on its course against the effects of a side wind, and accordingly this plan is faulty. It deprives the bottom of the furrow of the horizontal surface which it should have, making it incline from the ploughed land towards that which is fast, and the furrow slice is no longer cut square; its section becoming rhomboidal instead of oblong, as it should be. This indeed can be obviated by the man pressing on the right handle of his plough, but he cannot continue to do so. The proper and best way of increasing the breadth of the furrow ploughed, is to lengthen the reins which connect the two horses together, so as to allow the left-hand horse to walk farther from the one in the furrow. By increasing the distance between the two horses, we increase the breadth of the slice cut; by diminishing it, we are enabled to cut a narrower slice. This, it will be observed, can only be done when the team is a pair of horses working abreast, and accordingly this, independently of the great waste of power occasioned by working horses in a row, is an advantage which the one mode of yoking possesses over the other.

5. We now come to the consideration of how land should be ploughed. The object to be aimed at is, not only to loosen the soil, or to put it in such a condition as it may be most easily and effectually broken up by the harrow, but also to expose the greatest surface of newly turned up soil to the action of the atmosphere. This, when the section of the furrow slice is as it should be, rectangular, will be effective when it is laid at an angle of 45°; and this can only be done when the breadth of the sod bears to its depth the proportion of about 10 to 7. A field ploughed seven inches deep, the furrows being ten inches wide, will expose a greater surface of new soil than if it were ploughed the same depth with any other breadth, or the same breadth with any other depth. This, moreover, applies when the furrow turned over will keep the form given to it, as when ploughing lea or grass land. In ploughing fallow, the greater the depth of the furrow slice in proportion to its breadth, the more effectual the ploughing, as the surface exposed is then independent of either, as in that case the earth turned up crumbles down on being moved by the plough.

Well ploughed land should have all the furrows perfectly straight, of the same depth and width, and all of them laid over at the same angle. The furrow slice should be cut perfectly clean: it should not be torn up, as it then not only does not look so well, but it requires a greater force to turn it. If the regulation of the plough has been properly attended to, then the excellence of the work depends on the ability of the ploughman and the docility of his horses. Whenever it is once arranged so as to "swim fair," then the man has only to hold the plough upright and see that the horses move in a straight line, and the furrow will be straight and of uniform breadth and depth in spite of him. When a field is to be ploughed, the first thing to be done is to draw two furrows at the distance of a perch from either end of the field, turning the sod out from that part of the field to be ploughed. Two head-lands are thus formed on which the horse may turn. The object of the furrow is, that the plough may be entered at once at the proper depth and width, and that on coming to the one at the opposite end of the field it may be lifted out at once, and not allowed to scratch a furrow on the head-land in turning. When turning on the head-lands the horses should walk straight out to the hedge or boundary of the field, and then turn at right angles to the right or left, as the case may be, till they draw the plough opposite that part of the head furrow at which it is again to be entered. On again turning, the ploughman at once enters his implement at the proper width and depth, and so turns another furrow. It looks well to see a head-land without being scratched or furrowed by the plough in turning.

On commencing to plough a ridge, the first two furrows should be thrown out, and then each thrown back again, with the fast land on which they were laid. The ploughman should be careful to place them lip high, so that neither shall overlap the other. Upon the neatness with which the first three or four furrows are laid depends, in a great measure, the ultimate appearance of the whole ridge. On this account the first three or four furrows should be shallower than the rest; for if they are laid too steep together, they are apt to fall back, and so disfigure the appearance of the ridge. In ploughing lea or grass land, we cannot turn out the first two furrows and then turn them back again, on account of the rigidity of the furrow slice; and in that case, therefore, a different plan is adopted: the ploughman marks out the first two furrows by taking out two small furrows, perhaps three inches wide and two inches deep, throwing them together on the fast land between them, which may be equal to the width of two ordinary furrows; and he then throws the third and fourth furrows lip to lip as he did over the first and second while ploughing fallow. He then proceeds with the ridge as before. This plan, however, is imperfect, as the land on which the third and fourth furrow slices are laid remains unemployed. It is a better way to lift out with a spade the two first furrows, and spread them over the whole of the field; or some people plough out the furrows, and then break them to pieces with the harrow before the land is begun to be ploughed. On leaving work, the ploughman should always turn his plough and commence a new furrow before unyoking his team: he should never leave his plough lying on the head-land.

6. The best mode of yoking a horse to the cart

remains yet to be considered. In the construction of the cart, care should be taken to give such a width between the shaft as will enable the horse to draw it even on the roughest road without rubbing his side against them. The common width allowed to the horse in the Gloucestershire farm cart is twenty-two inches; in the single-horse Scotch cart it is thirty-two inches, which is found to be sufficient.

In these carts the horse draws from a staple placed in the shaft, as far back as the cart saddle. In loading the cart the horse is made to bear a considerable weight upon his back, and thus only a portion of the load is left to be sustained by the wheels. It is this portion of the load alone (the friction occasioned by the weight), which he has to overcome when he is hauling on a horizontal road. It is, however, in hauling up hill that the greatest advantage of this mode of loading the cart is more especially felt, for then the horse has not only to overcome friction, but he has to exert an additional force, dependent on the weight of the load and the angle of the ascent. If, then, we diminish the load on the wheels, by placing part of it on his back, we enable him to exert his strength in two ways, not only by leaning against his collar, but also by exercising an uplifting or carrying power.

The *navigator*, as the excavator is called, knows the value of exerting an uplifting power in moving heavy bodies, and he consequently makes use of it. When he loads his wheelbarrow, instead of placing the greatest weight near the wheel, and having long handles, he loads it heaviest next the handles, which are very short; and he is then enabled to carry more than half the weight, and he finds that this plan greatly facilitates the work.

There is another mode of economising strength, which is very generally disregarded, and nowhere so much as in this country. This is to yoke horses abreast, instead of in a row one before another. In carts, however, when this rule cannot be followed, it is but to make each horse trust to his own strength by having one-horse carts. Three single-horse carts have been found to draw as heavy a load the same distance in the same time as a waggon with six horses in a row.

In the collieries, in Durham, it has been found that the strength of one horse in four when drawing in line is lost, and that a single horse, working in a cart twelve hours a day, will haul a ton of coals twenty-six miles each day in the week. It must be evident that when four or five horses are placed in a row to draw a cart or a plough, as is frequently the case in Gloucestershire (we have here seen eighteen horses, attended by six men and as many boys, drawing the mole-plough eighteen inches deep, which is at the rate of one inch per horse), there must be an immense loss of power. The foremost horses will be exerting all their force to pull the others into a straight line; for as soon as any deviate from the line of draught, their efforts are exerted to neutralize those of the others; and when they go over a rising or uneven ground, the foremost waste all their strength in pulling the others into the ground; and the strength of them, which alone is of any value, as they alone pull direct from the implement, is greatly diminished by their efforts to bear up against the pressure then laid on them.

TABLE

Shewing the length travelled by a Horse in Ploughing an Acre of Land; also, the Quantity of Land worked in a Day, at the rate of Sixteen and Eighteen Miles per Day of Nine Hours.

Breadth of Furrow Slice.	Space travel'd in ploughing an acre.	Extent ploughed per day at rate of	
		18 Miles.	16 Miles.
		Acres.	
Inches.	Miles.		
7	$14\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{8}$
8	$12\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{4}$
9	11	$1\frac{3}{5}$	$1\frac{1}{2}$
10	$9\frac{9}{10}$	$1\frac{4}{5}$	$1\frac{3}{5}$
11	9	2	$1\frac{3}{4}$
12	$8\frac{1}{4}$	$2\frac{1}{3}$	$1\frac{9}{10}$
13	$7\frac{1}{2}$	$2\frac{1}{8}$	$2\frac{1}{10}$
14	7	$2\frac{1}{2}$	$2\frac{1}{4}$
15	$6\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{2}{5}$
16	$6\frac{1}{6}$	$2\frac{9}{10}$	$2\frac{3}{5}$
17	$5\frac{3}{4}$	$3\frac{1}{10}$	$2\frac{3}{4}$
18	$5\frac{1}{2}$	$3\frac{1}{4}$	$2\frac{9}{10}$
19	$5\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{1}{10}$
20	$4\frac{9}{10}$	$3\frac{3}{5}$	$3\frac{1}{4}$
21	$4\frac{7}{10}$	$3\frac{4}{5}$	$3\frac{1}{8}$
22	$4\frac{1}{2}$	4	$3\frac{1}{2}$
23	$4\frac{1}{4}$	$4\frac{1}{5}$	$3\frac{7}{10}$
24	$4\frac{1}{8}$	$4\frac{1}{8}$	$3\frac{9}{10}$
25	4	$4\frac{1}{2}$	4
26	$3\frac{4}{5}$	$4\frac{3}{4}$	$4\frac{1}{5}$
27	$3\frac{3}{5}$	$4\frac{9}{10}$	$4\frac{1}{8}$
28	$3\frac{1}{2}$	$5\frac{1}{8}$	$4\frac{1}{2}$
29	$3\frac{1}{2}$	$5\frac{1}{4}$	$4\frac{3}{5}$
30	$3\frac{1}{8}$	$5\frac{1}{2}$	$4\frac{4}{5}$
31	$3\frac{1}{5}$	$5\frac{3}{4}$	5
32	$3\frac{1}{10}$	$5\frac{4}{5}$	$5\frac{1}{4}$
33	3	6	$5\frac{1}{3}$
34	$2\frac{9}{10}$	$6\frac{1}{5}$	$5\frac{1}{2}$
35	$2\frac{4}{5}$	$6\frac{1}{4}$	$5\frac{3}{5}$
36	$2\frac{3}{4}$	$6\frac{1}{2}$	$5\frac{4}{5}$
37	$2\frac{2}{3}$	$6\frac{1}{4}$	6
38	$2\frac{3}{5}$	$6\frac{9}{10}$	$6\frac{1}{8}$
39	$2\frac{1}{2}$	$7\frac{1}{8}$	$6\frac{1}{8}$
40	$2\frac{1}{2}$	$7\frac{1}{3}$	$6\frac{1}{2}$
41	$2\frac{2}{5}$	$7\frac{1}{2}$	$6\frac{3}{4}$
42	$2\frac{1}{3}$	$7\frac{3}{4}$	$6\frac{2}{3}$
43	$2\frac{3}{10}$	$7\frac{4}{5}$	7
44	$2\frac{1}{4}$	8	$7\frac{1}{10}$
45	$2\frac{1}{5}$	$8\frac{1}{6}$	$7\frac{1}{4}$
46	$2\frac{1}{6}$	$8\frac{1}{3}$	$7\frac{2}{5}$
47	$2\frac{1}{10}$	$8\frac{1}{2}$	$7\frac{3}{5}$
48	$2\frac{1}{12}$	$8\frac{3}{4}$	$7\frac{3}{4}$
49	2	$8\frac{9}{10}$	$7\frac{9}{10}$
50	2	$9\frac{1}{10}$	$8\frac{1}{10}$
51	$1\frac{9}{10}$	$9\frac{1}{5}$	$8\frac{1}{4}$
52	$1\frac{9}{10}$	$9\frac{1}{2}$	$8\frac{2}{5}$
53	$1\frac{9}{10}$	$9\frac{3}{4}$	$8\frac{1}{2}$
54	$1\frac{4}{5}$	$9\frac{4}{5}$	$8\frac{3}{4}$
55	$1\frac{4}{5}$	10	$8\frac{9}{10}$
56	$1\frac{3}{4}$	$10\frac{1}{4}$	9
57	$1\frac{3}{4}$	$10\frac{2}{5}$	$9\frac{1}{8}$
58	$1\frac{7}{10}$	$10\frac{3}{5}$	$9\frac{1}{8}$
59	$1\frac{7}{10}$	$10\frac{3}{4}$	$9\frac{1}{2}$
60	$1\frac{3}{5}$	$10\frac{9}{10}$	$9\frac{7}{10}$
61	$1\frac{3}{5}$	$11\frac{1}{5}$	$9\frac{4}{5}$
62	$1\frac{3}{5}$	$11\frac{1}{3}$	10
63	$1\frac{3}{5}$	$11\frac{1}{2}$	$10\frac{1}{5}$
64	$1\frac{1}{2}$	$11\frac{7}{10}$	$10\frac{1}{8}$
65	$1\frac{1}{2}$	$11\frac{4}{5}$	$10\frac{1}{2}$
66	$1\frac{1}{2}$	12	$10\frac{3}{5}$

Breadth of Furrow Slice.	Space travel'd in ploughing an acre.	Extent ploughed per day at rate of	
		18 Miles.	16 Miles.
Inches.	Miles.	Acres.	
67	1½	12¼	10⅘
68	1½	12⅖	11
69	1⅖	12⅗	11⅛
70	1⅖	12¾	11⅓
71	1⅖	12 9/10	11½
72	1⅖	13⅛	11⅗
73	1⅓	13⅓	11⅘
74	1⅓	13½	12
75	1⅓	13⅗	12⅛
76	1 3/10	13⅘	12¼
77	1 3/10	14	12½
78	1¼	14¼	12⅗
79	1¼	14⅖	12¾
80	1¼	14⅗	12 9/10
81	1⅕	14¾	13 1/10
82	1⅕	15	13¼
83	1⅕	15⅛	13⅖
84	1⅙	15⅓	13⅗

A Table, showing the number of bushels of Barley and Oats per acre, which are equal in value to a crop of Wheat, of from 16 to 40 bushels per acre, each kind of grain being calculated at the average prices of England and Wales for the last eighteen years, ending 1838.

Wheat at 7s.			Barley at 4s.			Oats at 3s.		
bush.	£	s.	bush.	£	s.	bush.	£	s.
16	5	12	28	5	12	37	5	11
17	5	19	30	6	0	40	6	0
18	6	6	32	6	8	42	6	6
19	6	13	33	6	12	44	6	12
20	7	0	35	7	0	47	7	1
21	7	7	37	7	8	49	7	7
22	7	14	38	7	12	51	7	13
23	8	1	40	8	0	54	8	2
24	8	8	42	8	8	56	8	8
25	8	15	44	8	16	58	8	14
26	9	2	46	9	4	61	9	3
27	9	9	47	9	8	63	9	9
28	9	16	49	9	16	65	9	15
29	10	3	51	10	4	68	10	4
30	10	10	53	10	12	70	10	10
31	10	17	54	10	16	72	10	16
32	11	4	56	11	4	75	11	5
33	11	11	58	11	12	77	11	11
34	11	18	59	11	16	79	11	17
35	12	5	61	12	4	82	12	6
36	12	12	63	12	12	84	12	12
37	12	19	65	13	0	86	12	18
38	13	6	67	13	8	89	13	7
39	13	13	68	13	12	91	13	13
40	14	0	70	14	0	94	14	2

A Table of the quantity of Flour and Bread from Grain.

	Weight per bushel in lbs.	Weight of Flour in lbs.	Weight of Bread in lbs.
Wheat	60	48	64
Barley	48	37½	50
Rye	54	42	56
Oats	40	22½	30
Peas and Beans	60	51	68

A Table, showing the exact proportion (per £100 Stock) the several Public Funds should bear to each other to yield the same Interest; by comparing of which with the Prices given in the Newspapers, &c., it will appear which Stock is most advantageous to purchase in.—The seventh column shows likewise what Proportion such Purchase bears to the Value of Landed Estates.

Bank Consols. 3	S. Sea Stock 3½	Bank Cons. 4	Bank Cons. 5	Bank Stock 7	India Stock 10	Years Pur. of Land.	Annual Interest. per cent.		
							£.	s.	d.
3 per cents. at 60 are equal	to 3½ at 70	80	100	140	200	20	5	0	0
61½	71¾	82	102½	143½	205	20½	4	17	6
63	73½	84	105	147	210	21	4	15	2
64½	75¼	86	107½	150½	215	21½	4	13	0
66	77	88	110	154	220	22	4	10	10
67½	78¾	90	112½	157½	225	22½	4	8	10
69	80½	92	115	161	230	23	4	6	11
70½	82¼	94	117½	164½	235	23½	4	5	1
72	84	96	120	168	240	24	4	3	4
73½	85¾	98	122½	171½	245	24½	4	1	7
75	87½	100	125	175	250	25	4	0	0
76½	89¼	102	127½	178½	255	25½	3	18	5
78	91	104	130	182	260	26	3	16	11
79½	92¾	106	132½	185½	265	26½	3	15	5
81	94½	108	135	189	270	27	3	14	0
82½	96¼	110	137½	192½	275	27½	3	12	8
84	98	112	140	196	280	28	3	11	5
85½	99¾	114	142½	199½	285	28½	3	10	2
87	101½	116	145	203	290	29	3	9	0
88½	103¼	118	147½	206½	295	29½	3	7	9
90	105	120	150	210	300	30	3	6	8
91½	106¾	122	152½	213½	305	30½	3	5	7
93	108½	124	155	217	310	31	3	4	6
94½	110¼	126	157½	220½	315	31½	3	3	5
96	112	128	160	224	320	32	3	2	6
97	113¾	130	162½	227½	325	32½	3	1	6
99	115½	132	165	231	330	33	3	0	7
100	116⅔	133⅓	166⅔	233⅓	332⅓	33⅓	3	0	0

Table of the average produce of a bushel of Wheat weighing 60lbs. manufactured at the Water of Leith Mills.

lbs.	
25½	of fine Flour.
22½	of Seconds.
1	of Pollard.
10½	Bran.
½	Loss.
60	

Average Price of Grain per quarter, in England and Wales, for Twenty-one Years, ending 1841.

	Wheat.		Barley.		Oats.		Beans.		Peas.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
1821	56	2	26	0	19	6	30	11	32	9
1822	44	7	21	11	18	2	24	6	26	5
1823	53	5	31	7	22	11	33	1	35	0
1824	64	0	36	5	24	10	40	10	40	8
1825	68	7	40	1	25	8	42	10	45	5
1826	58	9	34	5	26	9	44	3	47	8
1827	56	9	36	6	27	4	47	7	47	7
1828	60	5	32	10	22	6	38	4	40	6
1829	66	3	32	6	22	9	36	8	36	8
1830	64	3	32	7	24	5	36	1	39	2
1831	66	4	38	0	25	4	39	10	41	11
1832	58	8	33	1	20	5	36	5	37	0
1833	52	11	27	6	18	5	35	1	37	0
1834	46	2	29	0	20	11	36	7	33	0
1835	39	4	29	11	22	0	30	0	30	3
1836	48	9	33	2	23	1	33	4	37	3
1837	55	10	30	4	23	1	38	7	37	9
1838	64	4	31	5	22	5	37	4	38	8
1839	70	6	39	1	26	6	41	3	41	1
1840	66	6	36	3	25	9	43	6	42	5
1841	64	5	33	0	22	5	39	1	40	5

Table, showing the quantity of Turnips that can be grown on an acre.

Col. 1, is the distance between the drills.

.. 2, distance between plants in rows.

.. 3, average distance between plants broadcast.

.. 4, space each plant occupies, or square inches on which they grow.

.. 5, number of turnips per acre.

.. 6, average weight of each turnip.

.. 7, weight per acre, if the average weight of the turnips were only 1lb. each.

.. 8, weight of crop per acre.

1	2	3	4	5	6	7			8		
in.	in.	in.	sq. in.		lb.	ton	cwt.	lb.	ton	cwt.	lb.
		10½	108	5 8080	1	25	18	0	25	18	0
27	8	14½	216	29030	2	12	19	3	25	18	0
27	12	18	324	19360	3	8	12	2	25	18	0
27	16	20½	432	14520	4	6	9	2	25	18	0
27	20	23	540	11616	5	5	3	2	25	18	0
27	24	25½	648	9680	6	4	6	0	25	18	0
27	28	27½	756	8297	7	3	14	3	25	18	0
27	32	29	864	7260	8	3	4	2	25	18	0
36	27	31	972	6452	9	2	17	3	25	18	0
36	30	33	1080	5808	10	2	11	0	25	18	0
36	33	34½	1188	5280	11	2	7	1	25	18	0
36	63	63	1296	4840	12	2	3	0	25	18	0

A Table, showing the weight of a Bushel and Quarter of Wheat, and the value of the Quarter according to its weight, varying from ¾d. to 2d. per lb.; also the value of a cwt. after the same rate per lb.

1	2		3		4		5		6		7		8		9		10		11		12		13	
Weight per Bushel.	Weight per Quarter in Stones 14lbs.		Price per lb. ¾		Price per lb. ⅞		Price per lb. 1d.		Price per lb. 1⅛		Price per lb. 1¼		Price per lb. 1⅜		Price per lb. 1½		Price per lb. 1⅝		Price per lb. 1¾		Price per lb. 1⅞		Price per lb. 2d.	
lbs.	st.	lbs.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
38	21	10	19	0	22	2	25	4	28	6	31	8	34	10	38	0	41	2	44	4	47	6	50	8
39	22	4	19	6	22	9	26	0	29	3	32	6	35	9	39	0	42	3	45	6	48	9	52	0
40	22	12	20	0	23	4	26	8	30	0	33	4	36	8	40	0	43	4	46	8	50	0	53	4
41	23	6	20	6	23	11	27	4	30	9	34	2	37	7	41	0	44	5	47	10	51	3	54	8
42	24	0	21	0	24	6	28	0	31	6	35	0	38	6	42	0	45	6	49	0	52	6	56	0
43	24	8	21	6	25	1	28	8	32	3	35	10	39	5	43	0	46	7	50	2	53	9	57	4
44	25	2	22	0	25	8	29	4	33	0	36	8	40	4	44	0	47	8	51	4	55	0	58	8
45	25	10	22	6	26	3	30	0	33	9	37	6	41	3	45	0	48	9	52	6	56	3	60	0
46	26	4	23	0	26	10	30	8	34	6	38	4	42	2	46	0	49	10	53	8	57	6	61	4
47	26	12	23	6	27	5	31	4	35	3	39	2	43	1	47	0	50	11	54	10	58	9	62	8
48	27	6	24	0	28	0	32	0	36	0	40	0	44	0	48	0	52	0	56	0	60	0	64	0
49	28	0	24	6	28	7	32	8	36	9	40	10	44	11	49	0	53	1	57	2	61	3	65	4
50	28	8	25	0	29	2	33	4	37	6	41	8	45	10	50	0	54	2	58	4	62	6	66	8
51	29	2	25	6	29	9	34	0	38	3	42	6	46	9	51	0	55	3	59	6	63	9	68	0
52	29	10	26	0	30	4	34	8	39	0	43	4	47	8	52	0	56	4	60	8	65	0	69	4
53	30	4	26	6	30	11	35	4	39	9	44	2	48	7	53	0	57	5	61	10	66	3	70	8
54	30	12	27	0	31	6	36	0	40	6	45	0	49	6	54	0	58	6	63	0	67	6	72	0
55	31	6	27	6	32	1	36	8	41	3	45	10	50	5	55	0	59	7	64	2	68	9	73	4
56	32	0	28	0	32	8	37	4	42	0	46	8	51	4	56	0	60	8	65	4	70	0	74	8
57	32	8	28	6	33	3	38	0	42	9	47	6	52	3	57	0	61	9	66	6	71	3	76	0
58	33	2	29	0	33	10	38	8	43	6	48	4	53	2	58	0	62	10	67	8	72	6	77	4
59	33	10	29	6	34	5	39	4	44	3	49	2	54	1	59	0	63	11	68	10	73	9	78	8
60	34	4	30	0	35	0	40	0	45	0	50	0	55	0	60	0	65	0	70	0	75	0	80	0
61	34	12	30	6	35	7	40	8	45	9	50	10	55	11	61	0	66	1	71	2	76	3	81	4
62	35	6	31	0	36	2	41	4	46	6	51	8	56	10	62	0	67	2	72	4	77	6	82	8
63	36	0	31	6	36	9	42	0	47	3	52	6	57	9	63	0	68	3	73	6	78	9	84	0
64	36	8	32	0	37	4	42	8	48	0	53	4	58	8	64	0	69	4	74	8	80	0	85	4
65	37	2	32	6	37	11	43	4	48	9	54	2	59	7	65	0	70	5	75	10	81	3	86	8
112	112	0	7	0	8	2	9	4	10	6	11	8	12	10	14	0	15	2	16	2	17	6	18	8

A TABLE, showing the present value in Years, Months, and Parts, of an Annuity or Lease for any certain time to come.

Years to be purchased.	At 3 per cent.		At 4 per cent.		At 5 per cent.		At 6 per cent.	
	Yrs. val.	Months. Dec. Pts.	Yrs. Val.	Months. Dec. Pts.	Yrs. Val.	Months. Dec. Pts.	Yrs. Val.	Months. Dec. Pts.
1	0	11.6	0	11.5	0	11.4	0	11.3
2	1	10.9	1	10.6	1	10.3	1	10.0
3	2	9.9	2	9.3	2	8.6	2	8.1
4	3	8.6	3	7.5	3	6.5	3	5.6
5	4	6.9	4	5.4	4	4.0	4	2.5
6	5	5.0	5	2.9	5	0.9	4	11.0
7	6	2.7	6	0.0	5	9.4	5	7.0
8	7	0.2	6	8.8	6	5.5	6	2.5
9	7	9.4	7	5.2	7	1.3	6	9.6
10	8	6.3	8	1.3	7	8.6	7	4.3
11	9	3.0	8	9.1	8	3.6	7	10.6
12	9	11.4	9	4.6	8	10.3	8	4.6
13	10	7.6	9	11.8	9	4.7	8	10.2
14	11	3.5	10	6.7	9	10.7	9	3.5
15	11	11.2	11	1.4	10	4.5	9	8.5
16	12	6.7	11	7.8	10	10.0	10	1.2
17	13	2.0	12	2.0	11	3.2	10	5.7
18	13	9.0	12	7.9	11	3.2	10	9.9
19	14	3.9	13	1.6	12	1.0	11	1.9
20	14	10.5	13	7.1	12	5.5	11	5.6
21	15	4.9	14	0.3	12	9.8	11	9.1
22	15	11.2	14	5.4	13	1.9	12	0.4
23	16	5.3	14	10.2	13	5.8	12	3.6
24	16	11.2	15	2.9	13	9.5	12	6.5
25	17	5.0	15	7.4	14	1.1	12	9.3
26	17	10.5	15	11.7	14	4.5	13	0.0
27	18	3.9	16	3.9	14	7.7	13	2.5
28	18	9.1	16	7.9	14	10.7	13	4.8
29	19	2.2	16	11.7	15	1.6	13	7.0
30	19	7.2	17	3.5	15	4.4	13	9.2
40	25	1.3	19	9.5	17	1.9	15	0.5
50	25	8.7	21	5.7	18	3.0	15	9.1
60	27	8.1	22	7.4	18	11.1	16	1.9
70	29	1.4	23	4.7	19	4.1	16	4.6
80	30	2.4	23	11.0	19	7 1	16	6.1
90	31	0.0	24	3.2	19	9.0	16	6.9
100	31	7.1	24	6.0	19	10.1	16	7.4
Fee Sim.	33	4.0	25	0.0	20	0.0	16	8.0

EXTRAORDINARY ROOT OF BARLEY.—A single root of Barley was exhibited at the meeting of the North Suffolk and South Norfolk Agricultural Association on Wednesday last, which consisted of 122 distinct ears. This root was the produce of one grain of barley. Half a perch was planted in single grains on an acre of land in rows four feet and half apart, and twelve inches distant in the rows, and produced fifty-four bushels.

A great natural curiosity was also exhibited, being a small branch of a tree, the leaves on one-half of which are horn-beam, and on the other American oak. There are three of these trees now growing near each other in the county of Norfolk, all of the same description. They are apparently of twenty-five years growth, and it does not appear that this remarkable phenomenon has ever before been observed.

ON THE ADVANTAGES OF EXTENDED CHEMICAL ANALYSIS TO PRACTICAL AGRICULTURE.

BY HENRY R. MADDEN, ESQ., M.D., PENICUIK.

(From the Transactions of the Highland and Agricultural Society of Scotland.)

During the last few years, the attention of agriculturists has been drawn towards the advantages likely to accrue to their art, by applying to it the principles of chemistry and vegetable physiology; and we cannot survey the numerous valuable works which have issued from the press, without feeling satisfied that, at least, the farmer's curiosity has been excited by the late statements of scientific persons. On this account we have felt anxious to bring before the Society a subject, we believe, of deep interest to all concerned in the welfare of the agriculture of the realm; and, moreover, a subject, the consideration of which is most peculiarly called for at this important, and we may, we think, justly add, critical period.

The minds of many of our most enlightened agriculturists are at present hesitating whether to pass over unnoticed the loudly-repeated suggestions of the man of science—the *theorist*, as they call him, and to decide, as their forefathers did, to follow on the well-beaten track, fancying it the best and most certain, solely because it is the one with which they are most intimately acquainted; or whether, aroused at last from their slumbers, they will shake off the trammels of old custom, and agree to be led forward into the promising and inviting field of improvement, so earnestly pressed upon their attention by the chemical philosopher.

The object of the following pages is to remove, as far as possible, some of the numerous difficulties with which the inquiring farmer has to struggle, and by which he has been so far and so repeatedly misled, as to have caused him in many instances entirely to forsake the field.

We believe that by far the greatest obstacle to the advancement of scientific agriculture hitherto, has been the want of *co-operation* between the farmer and the chemist. Each has tried to move forward alone, and thus each has been led astray. We may not inaptly apply to them the well-known story of the lame and the blind, neither of whom alone could proceed with safety, but, when united arm in-arm, the defects of each were fully compensated for by the superior advantages of the other. Thus the farmer, from his knowledge of practice, is enabled to progress in any given direction, but, from his want of acquaintance with the fundamental principles of his art, may be justly considered *blind*; whereas the chemist, however clearly he may see the end to be attained, makes but a very *lame progression*, owing to his ignorance of practice. Let the two but consent to become mutually dependent, and, proceeding arm-in-arm, the assured step of the well practised farmer will be guided in the right way by the clear-sighted knowledge of the enlightened chemist.

A few years ago, we might almost have said a few months, this statement would have been looked upon as far too theoretical to be worthy of serious attention. We trust, however, that so much has been done very recently to prove practically the value of scientific knowledge to agriculture, and the minds of many of our enlightened farmers have been so stedfastly directed to the subject, that we can no longer accuse them of that apathy to philosophic research, which has so long proved the greatest obstacle to scientific improvement.

We trust we shall not create disappointment and alarm in the few practical minds which have of late been directed to this subject, when we endeavour to point out some serious errors into which they have unconsciously fallen ; but, at the same time, we cannot persuade ourselves to look calmly on, while such errors are being committed ; which, we feel convinced, will ultimately produce much more serious discouragement, when their results are ultimately brought to light, than could be produced by any admonitions that we are desirous of giving to prevent serious disappointment.

We purpose treating this subject under the following divisions :—

1. As regards the use of new manures, that there are many collateral circumstances requiring attention, if the experimenter is anxious to avoid failure.

2. That, as regards the results obtained by the employment of these manures, the ordinary mode of estimating crops is so fallacious, that it is impossible to obtain, by its means, any result implicitly worthy of trust.

3. That, in judging of new improvements in general, it is impossible to predict the *ultimate* effects, whether injurious or otherwise, unless the inquirer is assisted by the labours of the man of science ; and we may here remark, that, owing to the mode adopted of rendering these observations public, we shall not endeavour so much to prove our point by the force of argument, thus requiring, on the part of our readers, the most careful attention, in order that we may be followed in its various steps ; but we shall, as far as possible, illustrate each portion by a few selected examples, thus bringing the whole more immediately under the eye, and, we trust, at the same time fixing it more deeply in the memory.

1. We proceed then to consider, first, that, in the employment of new manures, various collateral circumstances require attention, if the experimenter is anxious to avoid failure.

The first great point to be attended to in the use of every kind of manure, is the exact purpose for which it is employed ; this being the same in every case, it may easily be remembered, viz.—*Every true manure is applied to soil for the purpose of giving to plants some essential ingredient which the soil, unassisted, is incapable of furnishing.*

Manures, for our present purpose, may be advantageously divided into *simple* and *compound.* Nearly all the abundantly employed manures are essentially *compound,* and we shall hereafter shew that this accounts for their more general, or, we would rather say, almost universal success ; whereas, most of the manures lately offered to the public, under the various denominations of specific, chemical, and scientific manures, have been more or less simple, and therefore admit of a much less extended application.

The origin of the compound manures in general use abundantly prove their universal applicability. If we once admit—which indeed it is impossible to deny—that the use of manure is to supply the plant with its component parts, then the more of these contained in the manure the more generally useful it will be to the plant.

For example, let us suppose a plant to contain six different substances, all equally necessary for its growth. If the manure contain only one of these, the soil must contain the remaining five ; whereas, if four were possessed by the manure, two only would be required by the soil ; and, if the manure contained all the six, of course the soil would, in this case, have little else to do than to support the plant mechanically, and supply it with water. We need hardly remark, that the last manure would in every instance be incomparably the best, provided *economy* did not enter vitally into the question. According to this view, the very best manure for every crop would be the plant itself in a state of decay ; thus wheat would answer best for wheat, turnips for turnips, beans for beans, &c.

To a certain extent this plan is actually adopted ; the straw of the crop is invariably returned to the soil, and much of the grain is likewise indirectly employed, after it has served as food for cattle, and hence it is that of all manures the *very best* is farm-yard dung ; for though many are more valuable in some particular respects, still none hitherto proposed can vie with it in universal applicability and pecuniary profit. And we may here state, as our confident belief, that no process of husbandry will prove, after a lapse of years, to be successful, which attempts to do away with farm-yard dung as the staple manure of the farm.

But, as we have just observed, we cannot afford to use the whole crop for manure ; a portion must be employed as food, and this portion invariably suffers a loss during its use. Now, the first object of the chemist is to point out the exact nature of this loss, and the most economical method of replacing it.

For this purpose various specific and chemical manures have been proposed, which have proved more or less successful, but which have hitherto been employed in so careless a manner that we feel convinced scarcely one hitherto published account of any of them is implicitly trustworthy. Some of the errors committed we shall now point out.

These specific manures are frequently capable of adding one or two substances only to the soil. It is evidently, therefore, of primary importance to ascertain, in the first place, whether the soil really requires the substance ; for it is impossible that any specific can be valuable when applied to soil already abundantly supplied with the very substance it is intended thus to add to the land ; in this instance, there must result either no effect or an injurious one, and, in consequence, in both instances disappointment.

Let us take an example : Nitrate of soda has been much and deservedly praised as a manure, and it has almost universally been declared to be equal to, and to act in a similar manner with, nitrate of potass (saltpetre), in which case it would have the advantage of greater cheapness to recommend it. But in the above statement it is quite forgotten that the manure acts in two distinct ways—1st, as a nitrate ; 2nd, as containing soda. Now, as regards the first action, viz., as a nitrate, these two salts can replace each other without the least difference in their action ; but, as respects the second mode of action, viz., the supplying the plant with soda, it is clear that they differ as distinctly as saltpetre does from common salt, and practice has proved this, for, in more than one instance, a considerable difference has been shown in the result obtained by the two manures.

Thus, Professor Johnston mentions the following result of an experiment at Erskine, near Glasgow, in 1841, upon hay, with the two nitrates, in two different fields—the one being a light soil, the other a clay. In the light soil the nitrate of soda produced three cwt. more hay per acre than the saltpetre, whereas, on the clay, the saltpetre exceeded the nitrate of soda by ¾ cwt. nearly; and it is well worthy of remark, that common salt, another compound of soda, was also employed in both cases, but yielded exactly five cwt. more upon the sand than on the clay; thus proving, we think, as well as a chemical analysis of the soil could have done, that the clay soil contained naturally more soda than the sand, and likewise, *probably*, that the sand was richer in potass. A similar case is likewise mentioned by Dr. Daubeny of Oxford, where the nitrate of potass exceeded the nitrate of soda, upon wheat, by upwards of four bushels per acre, and in which case the nitrate of soda produced *no effect whatever*; in fact, an equal portion of soil, without any top-dressing, produced twenty-four lb. more grain than that upon which the nitrate of soda was used. (See Table I.)

We need scarcely here remark, what many writers have already observed regarding the use of lime—that the farmer should in all instances determine, in the first place, whether his soil contains lime in sufficient quantity already, because if this be the case, the only value of lime would then be referable to its chemical action upon the organic matter of the soil, which of itself is very evanescent; and the ulterior effect would be rather injurious than otherwise, by overstocking the soil with one particular ingredient.

All farmers are well acquainted with the very different results obtained by the use of salt as a manure, producing in some cases excellent results, in others no effect whatever, and in others having a positively injurious effect. If, however, we examine carefully into the results, we shall find that, after leaving out those where obvious mistakes in quantity were made, they directly corroborate the opinion already stated, viz., that the applicability of a specific manure should be determined by analysis, in order to prevent the probability of a failure; for it will be found, by examination, that, in those cases where it either produced no effect, or was injurious, the soil was in a situation to receive supplies of salt from natural sources; whereas, the situations where salt is useful as a manure, are such as to exclude these natural supplies.

It may not be generally known that the clouds which form over the sea always contain a greater or less quantity of salt, which of course will be deposited in the soil by the rain; and, moreover, that, during the occurrence of sea-breezes, the spray travels to a very considerable distance inland, and is likewise deposited on the land. From these two sources it may be premised, with comparative certainty, that places near the sea, particularly such as lie in the direction of the prevailing sea-breezes, will obtain a sufficiency of salt; whereas inland situations will, in all probability, be much benefited by an artificial supply. To give some idea of the quantity of salt contained in clouds near the sea, I may state that I last year analysed the rain which fell at Penicuik, and found it to contain so large a proportion of salt, that, calculating the fall of rain at 31 inches per annum, each acre would receive 641lb., or nearly 6 cwt. of salt, from this source alone.

In the sixth volume of the Transactions of this Society, there are detailed accounts of various experiments with salt, made in different situations, of which the following is a very brief summary.

1st, On the farm of Forest, near Stonehaven, Kincardineshire, a spot freely exposed to the frequent east winds coming directly from the German Ocean, salt either entirely failed, or acted very injuriously, and in no one experiment produced an encouraging result.

2nd, At Barnyards, in the county of Aberdeen, a place somewhat similarly situated, no effect whatever was produced by salt as a manure.

3rd, At Mount Annan, Dumfriesshire, near the Solway Firth, where the south-west winds will bring the spray to shore, salt produced little or no effect upon wheat, turnips, or flax, but was found useful for pasture, on which it had nearly as much effect as shell lime.

4th, At Almond Myrehead, near Linlithgow, where, whatever be the direction of the wind, it must sweep over several miles of land before it can reach this spot, salt was found beneficial in every instance where it was judiciously applied, giving an increase both in measure and weight of grain, and in potatoes producing 11¼ bolls more per acre.

And, *lastly*, in the experiments with salt published in Professor Johnstone's "Suggestions," the most beneficial results were obtained in the neighbourhood of Glasgow and Paisley.

Surely this must be a sufficient proof to all who candidly consider the subject, that, in the application of specific manures, a knowledge of the natural constitution of the soil is absolutely necessary, if one is desirous of avoiding disappointment.

Another point, however, which is equally deserving of attention, is the difficulty experienced by farmers in ascertaining the purity of the manures they purchase, and in this way they are at present left entirely at the mercy of the specific manure venders, numbers of whom are daily advertising the *wonderful* effects of some particular compound of their invention, which, if we were to believe their statements, would speedily have the effect of changing entirely the agriculture of the country. We cannot too strongly advise farmers to be cautious in giving credence to such advertisements, as we know of more than one instance where disappointment and loss have followed the use of these highly lauded mixtures.

Since writing the above, I have performed several analyses of nitrate of soda and saltpetre, the results of which corroborate, in a striking manner, the necessity of a chemical analysis of all these manures.

Three different specimens of nitrate of soda, sold at 25s. per cwt., were submitted to analysis, when they were found to contain respectively 14, 25, and 26 per cent. of common salt! Now, these specimens were purchased from extensive dealers in the article, and were contained in the bags in which it was imported, so that we have no reason for suspecting the honesty of the retailer; and it follows, therefore, that this shameful amount of adulteration must be effected prior to its being shipped for Britain. I would desire that you bear in mind, however, the fact, that the presence of common salt, even to this enormous extent, may be natural; but yet the imposition upon the British farmer is equally glaring, whichever be the case, as will be seen by the following statement regarding saltpetre. This article likewise contains common salt, though in much smaller quantities; but, in this instance, the fact is not attempted to be concealed. Every cargo is analysed at the India House before it is sold, and the per-centage of salt marked upon it, and the amount of salt deducted from the lot purchased. For example, suppose the saltpetre contained 10 per cent. of salt, if a purchaser buys 100 cwt., he receives the 100, but only pays for 90. Here, therefore, there is no deception; but we would ask how it happens that the same is not done with nitrate of soda, and that three specimens containing from 14 to 26 per cent. of salt should all be sold at one and the same price? Why, if justice were done in this case, the specimen containing 26 per cent. should have sold at 22s. in place of 25s., if that be the fair price for the lot containing 14 per cent.; and if, on the contrary, 25s. is the proper price for the pure article, these three lots should have sold respectively at 21s. 6d., 18s. 9d., and 18s. 6d. per cwt.

Before leaving this interesting subject, we would make one other observation, viz., concerning saltpetre. I find, by reference to the most extensive purchasers of this article, that it sells at the India House in 5 ton lots at a price varying from 25s. to 29s. per cwt.; whereas it is retailed to farmers at the enormous profit of from 50s. to 55s. For example, I analysed a specimen sold to a farmer at 55s. per cwt., and detected 2 per cent. of salt in it; whereas another specimen, purchased at the India House at 28s. 6d., contained less than 1½ per cent. of salt, and, be it remembered, the lots were purchased at nearly the same time, during which there had been little or no fluctuation in the market. These observations would naturally lead us to various calculations, proving that, in the present state of matters, saltpetre is really, contrary to the generally received opinion, by far cheaper than nitrate of soda; but I shall refrain from them just now, and return to the matter in hand.*

Again, many failures annually occur in the use of these manures, by a want of knowledge on the part of farmers as to the particular crops to which they are best fitted; a kind of knowledge which they cannot obtain until every crop has been most rigidly analysed, in order to prove not only what different substances it generally contains, but what is absolutely necessary for the maintenance of its thriving condition. This, therefore, would be one of the primary objects to be determined by the agricultural chemist; and we feel convinced that many valuable results may be expected from its prosecution, among which a more economical rotation would, we believe, form an important item.

2. We must proceed, however, to consider the second branch of our subject, viz., that, as regards the results obtained by the employment of specific manures, the ordinary mode of estimating crops is so fallacious, that it is impossible by its means to obtain any results implicitly worthy of trust.

A circumstance most particularly to be attended to in the estimation of crops, and one far too apt to be neglected, is, that bulk and weight are not necessarily true indices of the real value, as they do not always represent correctly the amount of nourishment contained, and we need scarcely remark, that the latter is the true object for which every crop is cultivated.

In the ordinary experiments performed with specific manures, we are first told the amount of manure employed, and then, if it be grain, the number of bolls yielded per acre—if turnips or hay, the number of tons; and although this statement is, of course, quite necessary, still it does not go to the root of the matter, and it is quite possible that a specific manure may produce a greater weight of crop, while, at the same time, there is no increase of nourishment, in which case it follows that there is a direct loss equal in amount to the price of the manure.

A few examples will best serve to illustrate this.

In the account of some experiments related in Professor Johnston's "Elements of Agricultural Chemistry," the results are stated in two tables; 1st, The number of bushels of wheat, oats, and barley obtained for each bushel of seed sown; and, 2nd, The amount of starch and gluten contained in 100 parts of each of the samples. The real value of the crop is therefore closely approximated by comparing the two tables together.

It is generally allowed that the amount of gluten may be considered as a direct index to the nutritive powers of the grain; and although this is not absolutely true, as there are other ingredients which add materially to its nutritious properties, still, for practical purposes, we believe it to be sufficiently accurate. Taking this for granted, let us compare the two tables together, and ascertain if an increase of bulk produced by manure is necessarily accompanied by an increase of nutriment.

In the experiments alluded to, cow dung produced 16 bushels of oats for each bushel sown; whereas night-soil (generally esteemed much the strongest manure) produced only 14½ bushels. Arguing from this alone, therefore, one would be apt to suppose night-soil inferior to cow-dung for oats, and, in fact without the aid of chemical analysis, such would have been the legitimate conclusion. When, however, the oats were analysed, it was found that that grown with cow-dung contained 3½ per cent. of gluten only, whereas the night-soiled specimen contained 5 per cent. Comparing these together, therefore, we arrive at the important conclusion, that whereas, by measure the night-soil was to the cow-dung as 14½ to 16; when the real nourishment was ascertained, the proportions were 72½ to 56, or as 12 to 9 nearly, showing a real increase of ¼, where, by the ordinary method, a deficiency of about ⅛ was apparently proved.

But there is another way in which the ordinary mode of estimating crops may lead one into error by under-rating the true value of a manure, even when it admits a certain amount of value. Thus, in the same set of experiments already referred to, sheep-dung produced 12 bushels of wheat for each bushel of seed, and horse dung produced 10 bushels, thus giving an apparent advantage of ⅙ only; but when the wheat was analysed, it was found that the sheep dung had produced a grain containing 33 per cent. of gluten, whilst that grown with horse-dung contained only 14 per cent., so that the real superiority of the sheep-dung over the horse-dung was as 396 to 140, or more than 2½ to 1; so that had the grain been equally rich in gluten, the return for sheep-dung being 12 bushels, that by horse-dung would not have exceeded 4½ bushels.

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* Owing to a report of this paper having appeared in the newspapers, I received a letter from Messrs. Mark Fothergill and Co., London, who deal extensively in nitrate of soda, and who inform me that they examine what they buy—that the average amount of salt is from 8 to 10 per cent., and that they reject as "*useless stuff*" any specimen containing above 13 per cent.

Again, pure vegetable matter gave a return of 13 bushels of oats to each bushel of seed, and horse-dung gave 14 bushels, so that here the horse-dung would be considered as very little better than pure vegetable matter; but chemical analysis showed that the former specimen contained only 3 per cent. of gluten, whilst the latter contained 6½ per cent. of this highly nutritious principle; so that the true comparative results of the manures was as 39 to 91, or not much more than 1 to 3. Here, again, the ordinary method of estimating crops made a manure appear to possess scarcely ⅓ of its real value. (See Table II.) The same may be said of various other manures and crops. But we trust we have already advanced sufficient proof of the absolute necessity of a chemical analysis of the crop, in every instance where the true comparative value of a manure is required to be ascertained.

3. We now propose to consider, in the third place, that in judging of new improvements in general, it is impossible to predict the ultimate effect, whether injurious or otherwise, unless the enquirer is assisted by the man of science. This we shall likewise illustrate by example.

It has been most satisfactorily proved that there are at least two distinct ways in which manures may produce crops. 1st, It may itself yield the elements of the crops, and hence, in this instance, the crop is merely the manure in a different form. Or, 2nd, It may enable the crops to obtain their elementary ingredients with greater facility from the soil, in which case, of course, the increased crop, though produced through the agency of the manure, is really obtained at the expence of the soil.

We need scarcely observe, that, when the interest of both landlord and tenant is to be consulted, it is of the greatest consequence that this point be accurately determined; for, however large the return obtained by the use of the latter kinds of manure may be, it is in all instances obtained by an unfair exhaustion of the soil. Now, here again chemical analysis can at once decide the point. We know what elementary substances are required by plants; we know, moreover, what is generally contained in soil, and hence we can at all times prove by analysis whether the manure is calculated to act directly or indirectly upon the crop. For example, suppose a crop to contain four substances, which we will call A, B, C, D, of which A and B are contained abundantly in *all* soils, but C D are more rare, and always in much smaller quantities. If we analyse a manure well suited for the crop, and find it to contain C D, either with or without A B, we at once pronounce it an excellent manure which acts directly on the crop, and hence will not unduly exhaust the soil.

If, however, the soil contains small quantities of C D, combined with a fifth substance F, which renders them difficultly obtainable by plants, and we find by analysing the manure that it contains neither A B C nor D, but is composed entirely of another substance X, which is of itself quite useless to the crop, but which, by combining with C and D existing in the soil, produces compounds C-X, D-X, which are easily obtainable by the crop; we then conclude, that while X will in all probability give remunerating returns, perhaps for several successive years, still it is unwise to employ it unless C and D can be added to the soil at will, without incurring any great expense.

The above case is far from being a rare one, and we would therefore strongly urge upon agriculturists the necessity of having all new manures analysed, even after practice has proved them to be beneficial, in order that we may ascertain with certainty, whether the increased returns are really produced directly by the manure, or whether they are derived entirely from the soil. (See Table III.)

There is a point of great consequence in reference to drainage, which serves well to illustrate our present subject. It is stated by many practical men, in regard to tile-draining, that when the subsoil consists of very stiff clay, the tile-soles may be dispensed with, and as the soles are somewhat costly, the farmers are willing enough to give them up, especially when they find that others have done without them, and yet their drains have continued to run well for some years. If, however, the opinion of a scientific person had been requested, he would at once have stated, that unless the drains rested on the surface of a rock, the tile-soles could in no instance be dispensed with, because, as Professor Johnston justly remarks, "*There are no clays which do not gradualy soften, under the united influence of air and running water.* In the course of ten or fifteen years, the stiffest clays will soften and allow the tile to sink, and many very much sooner. The passage for the water is thus gradually narrowed, and when the tile has sunk a couple of inches, the whole must be taken up. Thousands of miles of drains have been thus laid down, both in the low country of Scotland and in the southern counties of England, which have now become nearly useless, and yet the system still goes on." This is surely a point of far too great importance to be passed over unnoticed, and most earnestly do we hope that farmers and proprietors who are busily draining their properties, will take timely warning from these valuable hints of Professor Johnston, and will not causelessly waste thousands of pounds in the end, to save a few units in the beginning.

Finally, we would say a word about the forming of plantations, and the selecting the trees for each particular district. It should always be borne in mind that trees, unlike crops, are to remain for an unlimited time, so that, when once planted, they are expected to thrive for perhaps upwards of a century, and on this account, proprietors are willing to lay out a considerable amount of capital upon plantations, in the hopes of abundant returns after the lapse of many years. How important, therefore, must it be in all cases, to take every precaution against failure, which, in this instance, must be attended with great pecuniary loss.

It is well known that very few, if any, forest-trees confine their roots to the soil, by far the greater quantity extending more or less deeply into the subsoil; and what is exceedingly interesting and important, it has been proved that trees growing in an unkindly soil either die out, or, if the soil contains a *minute* supply of all that they require, they send nearly their whole strength to the roots, which travel to great distances in all directions, in search of a sufficiency of those ingredients of which they can obtain only a very minute supply at each particular spot; since, however, it is the stem and not the root which is in most cases turned to a profitable account, the strength of the sap being expended upon the root, must at all times be attended with loss. Very little has hitherto been done regarding the chemical analysis of forest-trees, but what has been accomplished goes to prove that the ashes of different trees differ so much from each other, that soils capable of bringing one kind to the greatest perfection may entirely fail to support others. This being the case, it is surely a want of foresight in a proprietor to plant perhaps hundreds of acres of certain trees, before he has determined by a chemical analysis of the soil and subsoil, whether they are calculated to produce a thriving plantation, or whether some other tree might not be better suited to the soil and climate.

I must now, however, conclude these hurried observations, trusting that I have succeeded, in some degree, in pointing out to members of this society a few of the important services likely to accrue to practical agriculture by the more extended application of chemical analysis.

TABLE I.

Comparative Effects of Nitrate of Soda and Saltpetre.

EXPERIMENT AT ERSKINE, 1841.

Crop.	Manure employed.	Soil.	Increase per acre.				Comparative value.		
			Ton.	cwt.	qrs.	lb.	Cwt.	qrs.	lb.
Hay,	Nitrate of soda, 120 lb.	Light soil, with subsoil gravel.	1	0	0	0	3	0	4
	Nitrate of potass, 120 lb.		0	16	3	24			
	Common salt, 5 bushels,		0	11	3	24	5	0	0
Hay,	Common salt, 5 bushels,	Clay, with subsoil clay.	0	6	3	24			
	Nitrate of soda, 120 lbs.		0	9	1	4	0	2	24
	Nitrate of potass, 120 lb.		0	10	0	0			

DR. DAUBENY'S EXPERIMENT.

Crop.	Manure employed.	Soil.	Produce per acre.			Comparative value.		
			Bush.	lb.	Straw.	Bush.	lb.	Straw.
Wheat	Nitrate of potass, 1 cwt.	Clay, with subsoil stiff clay.	31	48	520 lb.	4	36	88 lb.
	Nitrate of soda, 1 cwt.		27	12	432 ..	0	0	11 ..
	Nothing.		27	36	421 ..	0	24	0 ..

TABLE II.

Comparative Effects of different Manures.

MANURE.	Produce from 1 bushel of seed.		Amount of Gluten per cent.		Comparative value.	
	Oats.	Wheat.	Oats.	Wheat.	Apparent.	Real.
	Bush.	Bush.	Bush.	Bush.	as	
Night soil	14½		5		14½ to 16	12 to 9
Cow-dung................	16		3½			nearly.
Sheep-dung		12		33	12 to 10	2½ to 1
Horse-dung................	14	10	4½	14	14 to 13	2 to 1
Vegetable matter	13		2¼			

TABLE III.

Composition of Soil.	CASE I. Composition of Crop.	Composition of Manure.
A, B, abundantly. C, D, in small quantity.	A, B, C, D.	A, B, C, D, or B, C, D, or A, C, D, or C, D, } excellent manures, which do not *unfairly* exhaust the soil.
	CASE II.	
A, B. abundantly. (C, E) not easily obtained by plants. (D, E) but rendered so by combination with X instead of E.	A, B, C D.	X gives good crops, but exhausts the soil.

AGRICULTURAL SHOW AT EDINBURGH.

EXHIBITION OF IMPLEMENTS.

In reply to a subscriber, who dates from Belfast, and complains of our abridged report of the meeting of the Highland Agricultural Society, we have to state that the list of prizes awarded for implements was accidentally omitted, but will be found below. We did not give a report of the speeches, &c. at the dinner, because we did not notice anything in them of a sufficiently practical and useful nature to require being permanently recorded. Our space being limited, we are therefore desirous of making the most profitable use of our pages, and cannot at all times occupy them with the mere complimentary and loyal speeches and toasts, &c., which are usually given at all societies, and fully reported in the local papers.

In regard to the implements exhibited, the number was considerably greater than on most former occasions, being 200, and presented for exhibition by 60 individuals. The Judges found it difficult to enter into details connected with so numerous examples of mechanism ; and they found it impossible to propose rewards from the funds allotted to this branch in the least degree corresponding with the merits of the inventions, or the expences incurred by the ingenious artizans who produced them. All that they could, therefore, do was only to advert in general terms to the instruments and machines produced, and to suggest a few premiums, indicating the opinion of the Judges of the relative merits which certain of them possess. The following premiums the Judges propose should be awarded :—To Mr. Ebenezer Alexander, Taylorton, near Stirling, for Implements for Cutting Drains—a Silver Medal. To Mr. James Ferguson, Bridge of Earn, for an Iron Drain Plough—a Silver Medal. To Mr. James Barclay, Morton, Kirknewton, for a Machine for Slicing Turnips, to be worked either with manual labour, or by being attached to a cart—Two and a Half Sovereigns. To Mr. John Colton, Athelstaneford, for a Turnip Slicer, to be attached to a cart—Two Sovereigns. To Mr. James Kirkwood, agricultural implement maker, Tranent, for a Turnip Slicer, to be attached to a cart—Three Sovereigns. To Mr. William Stone, Lawton, near Jedburgh, for a Machine for Cutting Turnips, to be attached to a common cart—Two Sovereigns. To Mr. William Blurton, Fieldhall, near Uttoxeter, Staffordshire, for his Revolving Cheese-drying Frame—Three Sovereigns. To Mr. James Inglis, Macbichill, near Noblehouse, for his Double Paring Plough and Harrow—Three Sovereigns. To Mr. Robert Law, Shettlestone, near Glasgow, for his Single Turnip Sowing Machine—Two Sovereigns. To Mr. Peter M'Pherson, Norton Place, Edinburgh, for his Turnip Sowing Machine—Three Sovereigns. To Mr. George Ponton, Groughfoot, near Edinburgh, for a Plough calculated to pare the surface and throw it into furrow—One Sovereign. To Messrs. T. and W. Smith, agricultural machine makers, St. Ninians, Stirling, for a Turnip and Bone-dust Sowing Machine—Three Sovereigns. To Mr. Peter Thomson, Peffermill, near Edinburgh, for a Machine for Depositing Soot—Four Sovereigns. To Mr. Walls, Carclue, Rozell, near Ayr, for a Double Wrist Subsoil Plough for Green Crops—Two Sovereigns. To Mr. George Johnston, Newton Stewart, for an Improved Winnowing Machine—Four Sovereigns.

The Judges commended the following Implements and Machines, viz. :—The Model of the Patent Machine of Mr. John Ainslie, Redheugh, for the making of Drain Tiles. The specimens of Axes and other Tools and Implements by Messrs. A. Carrack and Sons, Fisherrow. The specimens of Ploughs by Mr. James Hunter, implement maker, Edinburgh. The Patent Cast-steel Spades and Shovels and other Implements by Messrs. Redpath, Brown, and Co., Candlemaker Row, Edinburgh. Examples of Iron Field-gates, Iron Hurdles, and specimens of Wire Work, by Messrs. W. and C. Young, 128, High Street, Edinburgh, on account of their cheapness and good workmanship. Fences, and other specimens of Iron Work, by Messrs. Joseph Smith and Son, wire-workers, High Street, Edinburgh. Improved Patent Reaping Hooks, by Messrs. Robert Sorby and Sons, Sheffield. The valuable collection of Messrs. Drummond and Sons, Stirling, comprehending upwards of forty-six articles, amongst which may be noticed the following :—Subsoil and Furrow Plough, suitable to small farmers ; Sidey's Manure and Turnip Drill for dropping the manure and seeds at given intervals. Various machines and mechanical inventions, by Mr. Smith, Deanston; amongst which were his Chain Webb Harrows, chiefly for the harrowing in of grain, grass, and clover seeds. By Messrs. Samuel and Hugh Morton, agricultural implement makers, Leith Walk, consisting of various implements and machines, well adapted to useful practice. By Messrs. Slight and Co., agricultural implement makers, Leith Walk, various well constructed machines and implements. By Mr. James Wilkie, Uddingstone, near Glasgow, his Swing Plough, Subsoil Plough, and other implements.

SCOTCH FARMING IN THE LOTHIANS.

TO THE EDITOR OF THE MANCHESTER GUARDIAN.

Northcliffe, Sept. 9th, 1842.

Dear Sir,—Now that parliamentary warfare is over, and the din of arms and of special constables is subsiding, it may perhaps not be uninteresting to your readers, more especially the agricultural portion of them, to peruse the notes I have made during my late visit to the Lothians, a visit which I made solely for farming purposes.

The Lothians comprise, I believe, the counties of Edinburgh, Haddington, and Linlithgow, and have latterly become celebrated for the superior system of cultivation carried on, the flourishing condition of the farmers, and the high rate at which the land is leased.

Considering the fate of the corn laws to be sealed, and all unequal protection to the landed interest about to be withdrawn, I was anxious, both as a landlord and a farmer, to prepare for the state of things which such a change might produce ; more particularly as a farmer, to prepare myself, by increased skill and economy in the management of my farm, for the keener competition and lower prices which the free introduction of foreign agricultural produce must establish.

I may perhaps just mention, that my farm is in the county of Hertford, and consists of 500 acres. It is conducted on the best system current 20 or 25 years ago, very superior to anything in these parts, and my bailiff was brought up in the Lothians; but aware that we have been stationary, whilst elsewhere, as in Scotland, a rapid progress has been going on, I determined to ascertain the actual state of farming where it had made the greatest advance, and with this view desired him to give me the meeting at Edinburgh on the 1st of July last. Owing to the kindness of a friend who understood farming well himself, and had an extensive personal acquaintance with the farmers, I was enabled to visit a number of farms of various descriptions, and to communicate with the farmers themselves in freedom and confidence.

It would be uninteresting to the general reader, were I even competent to do it, which I am not, to enter minutely into details: those capable of understanding them should visit the country; and, whether they do so on a tour of profit or amusement, they will be most amply repaid.

The general conviction which remains upon my mind is this, that with a system equal to that of the Lothians, established throughout England, landlords might receive double rents, farmers be rich and prosperous, and the country be rendered, for two generations, independent of foreign supplies, notwithstanding an abolition of all protective duties. I am confident the agricultural produce of England, Wales, and the West of Scotland, might be doubled; and that of Lancashire and Cheshire be tripled, and this without any material addition to the agricultural population.

The Lothian farms consist each of from 200 to 500 Scotch acres, the Scotch acre being one-fourth larger than the English statute acre; and I shall limit my remarks to the current acre of the Lothians, not knowing whether it is, or is not, the common measure of Scotland. Some few farms are rather smaller, chiefly those a few miles from Edinburgh, upon which it is not necessary to keep stock for the purpose of manure, and some few are larger, where stock is fattened for market; but a farm of 300 to 500 acres is, by common consent, the utmost which one farmer is thought capable of managing himself, just as a concern of 500 looms is considered, in this country, enough for the personal superintendence of one man.

The farm buildings are small, compact, and situated near the centre of the farm, and have always a *steam engine* of six to eight-horse power for thrashing and other purposes. The corn is put up in stacks in a stack-yard, near the thrashing machine; the stacks being of such a size as that one may furnish a day's work for the thrashing machine. At the entrance of the farm-yard is the dwelling of the greeve or bailiff; for every farmer keeps a bailiff, who superintends every thing on the farm, and is cognizant of every thing that goes in or out of the farm buildings.

A fact which struck me much was, that the greeve received only *one shilling a week* more than the ploughman. The explanation given me is equally remarkable, that every man on the farm has knowledge enough for the situation of greeve; but that every man has not the qualifications which fit him for the management of other men, or perhaps is not sufficiently trustworthy for so responsible a situation. That the requisite knowledge for conducting a farm of 500 acres may be had for 12s. a week (the wages of a ploughman), and that 1s. extra will command the extra qualifications for a bailiff, speak eloquently what education has done for the peasantry of this part of Scotland. I found the greeves universally clever, acute, and sensible; and their minds open to what was passing in the world, beyond the limits of their own farm or immediate neighbourhood.

The farmer's dwelling-house is generally a little in front of the farm buildings, a neat, comfortable house, with kitchen and flower garden attached.

The farmers themselves are men of much superior education, manners, and style of living, to the possibly equally wealthy ones of the farming counties of England, even Lincolnshire and Norfolk, where the farms are of about equal extent with those of the Lothians. As a class, they would compare more with master manufacturers of Lancashire, so keen and pushing. Few of them are without a handsome phaeton for the use of the female members of their family; they are all of most hospitable habits; and I was informed that, excepting for a month at seed time, and the same at harvest, they have company at home, or dine out, at least three times a week. One feature throughout the Lothian farms may be remarked—*a great uniformity in the quality of the crops.* Not as elsewhere, here a good farmer, and there a bad one; here a failing crop, there a middling one; and here again a finer one; but nearly all the same, showing that farming is there reduced to a science, leaving nothing uncertain but the *seasons*, and which, affecting all nearly alike, do not materially affect the uniformity I speak of.

The present season has been remarkably favourable in the Lothians, as a whole, though somewhat too dry. The wheat would average about five quarters to the acre; and in the 70 or 80 acres on the same farm, it would sometimes be difficult to point out a square yard which carried more, or fewer, ears than the rest of the field.

The farms are divided into fields of from 20 to 50 acres each; the hedges are clipt low and thin, and the ditches covered in, so as to occupy as little space as possible. There are no trees in the hedgerows, and few furrows in the land, all being laid down flat; and thus, between one thing and another, the entire area of the farm is made productive, and the expense of fences and gates is reduced to a minimum.

Another thing worth noting is, that permanent grass, either as meadow or pasture, is unknown, or nearly so; the only hay, or pasture, is derived from artificial grass, sown in the regular rotation of crop, and which remains two or three years down, and is then ploughed up and followed by oats. The crops of artificial grass were extremely heavy. I counted, in one field of 16 acres, no less than 234 sheep, from 150 to 200 of which had been on the land since the 1st of April. On another farm, a field of the same size had on it 20 cows; and in both the feed, chiefly white clover, was abundant, and of the finest quality.

The *rent* of the Lothian farms is from 3*l*. 10s. to 7*l* *per acre*; and these high rents the farmers not only pay, *but thrive upon*; indeed, a more thriving set of men I never met with. They are enabled to pay these rents and thrive; partly *by the heavy crops arising from skilful cultivation*, and partly by *economy of management* in every department. Actual wages, however, are as high as in England, namely—10s. to 11s. a week for a common labourer; 12s. for a ploughman, and 9d. a day for women; ten hours to the day. As to the great amount of produce, it must be remembered that *all the land is under the plough.* Five quarters of wheat are reckoned a good average; but some fields turn out *six* to the acre. Ten or eleven quarters of oats, eight to ten tons of potatoes, and 26 to 30 tons of turnips, are reckoned good fair crops. Economy of management is shown in many ways:—

1. In the position and quality of farm buildings, in having no land lying idle or unproductive, and in the use of machines and horses, instead of manual labour, wherever circumstances admit of it.

2. By confining attention to as few points as possible. Thus, instead of buying a stock to feed off the grass during the two years the land is seeded down, it is let off to stock feeders or butchers, at generally about 6*l.* per annum the acre, and the farmer's attention and capital is thereby saved from distraction and division. They contract, in like manner, to supply turnips, or both stalls and turnips, &c., for the winter, at so much the ton for turnips, or at so much the head, to the stock-feeder; and so the stock-feeder, in his turn, becomes limited to his own peculiar branch of business. The dairyman, in the same way, hires the fields in grass by the year, or for the summer, and contracts for his turnips during the winter; thus attending to nothing but his cows, which, by-the-bye, he scrupulously milks *three times a day*, for at least half the year. In a similar spirit also, instead of getting up his potatoes himself, and *with a fork as is done with us*, the Lothian farmer sells his crop of potatoes at 14*l.* or 20*l.* per acre, according to the crop and state of markets, *to a dealer*. The farmer then *turns up the potatoes with the plough*; the dealer appears with a hundred women and children, and sacks and scales; and the whole crop is transferred from the field to the market, or shipped for London, in one-tenth the time, and at one-tenth the expense, which would be required in England.

3. Economy in the use and keep of horses: such an abuse as *three horses to a plough*, except to the subsoil plough, is unknown. The universal complement for 100 acres, I found to be two pair of horses, two ploughmen, one labourer; the number of women and children varying with the particular crop, perhaps six or eight during the season.

In this small allowance of horses, it must be remembered, that the *whole* 100 *acres is arable*, there being no permanent pasture.

The winter keep of the horses is a mixture of half-chopped straw, or chopped anything, and *half-steamed* turnips or potatoes; and this feed is found not only much cheaper than hay and oats, but the horses are kept in better condition, and enjoy better health. No horses could look in finer condition than they did, without exception.

All the Lothian farms are held on 19 *years' leases*, and the rents wholly, or partly, *corn rents*, rising and falling with the yearly fluctuations of the price of corn. The tendency of a corn rent I conceive to be to throw fluctuations in the value of a farm—that arising from an alteration of corn-laws, for example —upon the landlord instead of the tenant.

Without a long lease, the farmers would not lay out their capital in the free manner they now do; and with a long lease, they feel independent of their landlords, more as if they were the actual proprietors, and altogether hold themselves higher, and with good reason, than the most wealthy of our English farmers.

In consequence of this independence, and part ownership as it were, of their farms, men of much superior rank, education, and capital engage in the business of farming, than is the case in England, or indeed *than ever will be the case in England*, under existing circumstances.

The foundation of all improvements in the Scotch farming is the system of *thorough draining*: and so essential is this considered, that most of the land is deemed unworthy of being farmed at all, until it has undergone this operation.

Thorough draining is a series of drains, of tiles or broken stones, made at regular distances, from 15 to 30 feet or more apart, according to the nature of the soil, over the whole field. This may be called the new system of draining, as opposed to the old one of cutting a few deep drains where springs actually show themselves, and which mode of draining is now, I beleive, entirely abandoned by the best farmers. For minute directions on this, and other branches of the subject, I refer to the book of Professor Low on Scotch husbandry, which is considered the best authority. I will merely remark, that it is advisable, in every case, to lay the drains in the old furrows, not across them; and the drains themselves should be from 16 to 18 inches deep. When made with stones, the top of the drain may be brought nearer the surface than is safe with tiles, and also when the land is for permanent grass, than when intended for arable; but I believe the tops, even of stone drains on grass lands, should be at least twelve inches below the surface of the ground, and that *tile drains, in arable land*, should not approach the surface nearer than 18 or 20 inches.

The sums spending at present in Scotland upon thorough draining are immense. It will be seen, in the following notes of the farms I visited, that one farmer had laid out 1,800*l.* in thorough draining alone, during the two first years of his lease. I will now put down two extracts from my notes of the farms I visited, and shall call them by different numbers, that the actual farms may not be recognised:—

No. 1. Meadow land in small holdings, where the common sewers of the town discharge; one or two miles from Edinburgh: the grass constantly cut and taken into town for cows and horses: *rent* 15*l. per acre*.

No. 2. At two miles from town, with ample supply of town manure—potatoes and turnips carried daily to Edinburgh for sale: *rent* 7*l. per acre*.

No. 3. Farm 340 acres: old lease of 19 years lately expired: old rent 1,700*l.*, or 5*l.* per acre. The farmer took 18,000*l.* to 20,000*l.* and has just bought a handsome estate in the neighbourhood, which he is improving. This farm is relet, on a new lease for 19 years, *at a rent of* 2,000*l.* *or* 6*l.* *per acre*.

No. 4. 200 acres, at three miles from Edinburgh: *rent* 1,000*l.* *to* 1,200*l.*—Thrashing machine, with dressers, and finishers, on most approved principle, made by Carlow, of Lenny Port, Costorphine, Edinburgh, cost 85*l.* exclusive of geering; steam engine, six horses' power, complete, for 120*l.* of Edinburgh manufacture. Last year the crop of wheat on this farm reached *six quarters to the acre*, and the whole was sold at 80s. per quarter. Contracts with blacksmith at 3*l.* per annum for each pair of horses, including shoeing, geer, plough and cart repairs, but no renewal. Laid by last year 700*l.* *besides living*.

Nos. 5 and 6. In one hand, or at least under one management. Last year and this together has spent 1,800*l.* in draining alone: this done with broken stones, which seems generally preferred; is not only cheaper, but more durable, than tiles. When tiles are used, always put flats or pans for them to rest on. Draining here varies from 18 to 60 feet between drains.

For seeding down 1 bushel of rye grass
8 lb. red clover,
4 ,, white,
4 ,, yellow, or trefoil,
per acre.

If intended to lie down three years, or indeed two, reverse the quantities of red and white clover. Lets his grass, and contracts for the sale of his turnips with a dairyman.

No. 7. 500 acres: rent 1,750*l.* seven miles from Edinburgh.—Too far from town to benefit, like the other farms, and a stiffer quality of land; grows less potatoes and turnips, but very fine beans, and obliged to keep stock. General stock for fatting, three-year old Angus breed, but some cross of the Caithness cow and short-horn bull, quite fat at two years old. Best manure, half rape, half dung; only good when used with dung; buys whole cargoes of rape. The gentleman who farms this, and his two brothers, pay together 4,500*l.* rent.

No. 8. 300 acres: 20 miles from Edinburgh.—Much draining going on. The first crop of turnips this farm had ever borne, being stiff land; they looked promising.

Price of large tiles, 50s. per 1,000, 14 inches long.
Ditto small, 32s. ,, ,,
Manure rape, 10 cwt.
Dung, 8 tons
per acre.

Fattens 40 oxen. The three-year-old Highland oxen fatten in four months.

No. 9. 300 or 350 acres; 25 miles from Edinburgh: *rent about* 1,200*l.*—Farmer absent; and, being the last year of the lease, the *greeve* was not communicative, thinking we were looking at the farm for ourselves. 70 acres in wheat, about 5½ quarters to the acre, and exactly equal over every inch of the field. The farm nearly without a fence, and almost every yard in the highest state of cultivation. Procures a good deal of manure from sea weed, being not far from the shore.

No. 10. A farm, or we should call it, an estate, of 600 acres, late purchased for 70,000*l.* without a single attraction of any kind but to a farmer. The proprietor has just laid out about 5,000*l.* in a new steading, or farm buildings, compact and complete, containing stalls for 25 horses, 8-horse steam engine, and every possible convenience for carrying on so large a concern. It contains numerous pens for stock-feeders, the farm to supply them with turnips for winter, and grass for summer; but it is not intended, I was given to understand, to meddle with stock themselves, without necessity, following out the plan of attending only to one branch of business.

The general course of cropping in the Lothians seems to be —wheat after summer fallow, or not; turnips or potatoes; barley, seeds; down for one, two, or three years, as circumstances vary; oats. When farther from town manure, and land stiffer, a crop of beans and peas is taken. In the East Lothians we saw comparatively few potatoes, whilst in the West Lothians it appears to be the grand crop.

The best approximation I could come to, as to the division of the gross proceeds of a farm gives—

Rent	33	per cent.
Expenses	47	do.
Profit and Interest	20	do.
	100	

I have thus endeavoured to give, in a somewhat unconnected way, the result of my observations on the Lothian farming; *where high rents, high profits, and a well-paid and contented peasantry, are all seen combined in a pleasing union.*

There is as wide a difference between the system existing there, and in these parts of England, as between that pursued in the small detached spinning mills of thirty years ago, and what is now practised in the first-rate factories.

It is an interesting question, but one I am not going to enter upon, how this improved system of cultivation can be introduced into England, particularly into our own and the neighbouring counties? Where are the landlords ready to grant a nineteen years' lease? Where the farmers of sufficient intelligence and capital to manage successfully 500 acres, and willing and able to lay out 1000*l.* to 1,800*l.* in draining alone, during the two first years of their leases? Where the ploughman educated enough to convert into bailiffs, on such farms, for an extra shilling a week?

I am inclined to think the superior and more practical education of the Scotch has been at the bottom of the improved state of things. Education has given the knowledge which has enabled them to apply their capital with success, and to extract from the landowner the long lease which enables them to invest their capital with safety as well as success.

I may, in concluding, mention a suggestion repeatedly made to me, that, instead of sending for Scotch bailiffs, who have many difficulties and prejudices to contend with among strangers, the English landowner should send intelligent young men to Scotland to spend a year or two upon the farms there, and so acquire the necessary knowledge, and who would, on their return to their own neighbourhoods, be better received than a stranger, and have greater facilities for introducing another system.

Apologising for the length of my remarks, which may perhaps not be altogether without value,

I remain, your obedient servant.
ROBERT HYDE GREG.

We must not omit to notice the first decided symptom of the shaking and crumbling down of that renowned fabric, the agricultural prosperity of England. The Government contract for beef and pork has been taken by German firms at, it appears, just about 4½d. per lb. for the pork, and 4¾d. for the beef—the tierce being 300lbs. weight. The fall in price from the contract of last year appears to be about 25 per cent., confirming what we have always said concerning the effects of the Tariff.

The large annual Government contract for supplying the navy with Irish provisions was taken on Thursday Somerset-house. The quantity required was 16,000 at tierces beef and 14,000 tierces pork. It was taken by London houses at from 10s. to 12s. per tierce below the prices of the Irish manufacturer. The following were declared the contractors.—

Beef.—	Cox, Heisch, and Co.	12,500
	E. M'Swiney	3,500
		16,000
Pork.—	Cox, Heisch, and Co.	8,600
	E. M'Swiney	3,500
	Barclay and Friend	1,100
	Jones Brothers	500
	E. R. Forster	300
		14,000

The prices were from 5*l.* 9s. 10d. to 5*l.* 14s. 8d. for pork, and from 5*l.* 18s. 6d. to 5*l.* 19s. for beef, the price of the former being about 30s., and the latter about 26s. per tierce lower than last season.

DR. MADDEN AND MR. MILBURN ON BONE AND RAPE-DUST.

BY EDWARD ADDISON.

[This article should have appeared in our last number but arrived too late for insertion.]

Thirsk, Aug. 19th.

In reading Dr. Madden's essay on the "Analysis of Bone-dust and Rape-cake, and their comparison with Farm-yard Manure," in the Magazine for last month, with some remarks and errors pointed out in it by Mr. Milburn, I was surprised to find that these errors not only exist, but that there are others in it sufficient to prove this important essay a failure the most complete that could have been imagined. I say this with all deference to the abilities of Dr. Madden, and agree with Mr. Milburn in considering him to be one of the best agricultural chemists in the United Kingdom. That he holds this elevated station in this important branch of chemistry, will be doubted by none who have met with the scientific writings which he has given to the world, and a failure in the present case does not at all prove that the confidence which has been placed in him has been unmerited. After a short glance at the more chemical part of this essay, I purpose to show the further errors which have been fallen into.

In the analysis of each of the three manures we have given to us the following component parts, viz., water, total organic matter, soluble matter, easily dissolved matter, and earthy phosphates. This is of itself an indefinite analysis, and not much suited to increase practical knowledge. The Doctor then proceeds to add to the table, by which he purposes to show the comparative value of these manures, the quantity of azote which each contains. The obtaining of this gas of course requires a separate analysis. Now the quantity of azote appears unquestionably by far the most important part to be known, in order to ascertain the respective value of the manures. Notwithstanding this, in his calculations of the quantity of azote he appears to fail. No doubt it has surprised many to find in his table that bone-dust contained little more than one-third of the quantity of azote existing in rape-dust, when it might be reasonably expected to contain much more. The Doctor does not tell us that the analysis which determined the quantity of azote placed in his table was his own, and we have not any reason to consider that it was, but on the contrary to believe that the quantity of azote which he gives as existing in bone-dust, to be evidently taken from page 202 of Professor Liebig's Organic Chemistry, and which is merely one of the Professor's suppositions, and which may be easily shown to be a very erroneous one. It is as follows:—"One hundred parts of dry bones contain from 32 to 33 per cent. of dry gelatine; now, supposing this to contain the same quantity of nitrogen as animal glue, viz., 5·28 per cent., then 100 parts of bones must be considered as equivalent to 250 parts of human urine." Then, if they contain equal quantities, and if 100 parts of glue contain 5·28 per cent. of nitrogen (azote), 32 to 33 parts of gelatine, which is about a third of the given quantity of glue, must contain near 1·77 of azote, the quantity given by the Doctor in his table. We doubt of the correctness of this supposition, because it is an unfair comparison to compare the gelatine of bones with animal glue, for we have reason to suppose that the bone gelatine has much the superiority over it as regards its quantity of azote; and besides this, in the preparing of animal glue, a large proportion of its azote must be wasted and driven off. And again, because we have by this method the quantity of azote which the gelatine alone contained, allowing nothing for the quantity which might be contained in the other component parts of the bones, and it is probably difficult to find a reason why none of them should contain any. Again, we may presume that a trial will soon prove that bone-dust is much more valuable than urine viz., in the proportion of one part to two and a half of urine, and consequently that the azote supposed to be in bone-dust to be much under-rated. And now, if we follow out Professor Liebig's method of ascertaining the value of manures (and which is much more correct than his method of determining the quantity of azote in bones, which we have quoted), and which consists in determining their value by the quantity of azote which they contain, we shall, so far from coming to the conclusion of the Doctor, which is that bones are double the value of rape-cake, that we should find, from the quantity of azote he has allowed them, that rape-cake was nearly three times the value of bone-dust. This will not do at all, and consequently we will endeavour to come to a more correct result, after the examination of his other calculations.

In the 6th and 7th tables the Doctor has attempted to show the comparative value of the three manures. In the 6th table he proceeds as follows:—

One ton of bone-dust equals,

			Farm-yard manure.	
As	regards	organic matter	1	ton
,,	,,	soluble matter......	1	,,
,,	,,	easily dissolved	2·9	,,
,,	,,	azote	3·9	,,
,,	,,	saline matter	5	,,
,,	,,	earthy phosphate....	18·3	,,

These various degrees added together produce in round numbers thirty tons. The Doctor then supposes by this, that he has shown by chemistry that one ton of bone-dust is equal to thirty tons of farm-yard manure. The fact is, that he has done no such thing, for the whole system of finding and adding together the superiority of one over the other is perfectly fallacious. In order to prove this, we will try one ton of bone-dust against one ton of bone-dust, and for the sake of distinction we will call one bone-dust and the other bone-manure; and by way of illustration, will suppose the bone dust to be double the value of the bone manure. Now the table will be as follows:—

One ton of bone-dust equals,

As	regards	organic matter....	2	tons bone-manure
,,	,,	soluble matter	2	tons ,,
,,	,,	easily dissolved ..	2	tons ,,
,,	,,	azote............	2	tons ,,
,,	,,	saline matter......	2	tons ,,
,,	,,	earthy phosphates ..	2	tons ,,

Now these added together and carried out precisely in the Doctor's own way, make twelve tons in favour of the bone-dust, and would consequently make the bone-dust twelve times the value of what we termed by way of distinction bone-manure, whereas to begin it was only double. Consequently, the same effect follows from an examination of the 7th table, or rape-cake and farm-yard manure. These are the results of a mode of calculation, certainly one of the most erroneous ever used. Besides all this, even the carrying out of the calculation is quite wrong, supposing all the rest to have been right; for, as the Doctor says, the 4th table is without the azote, and, consequently, he makes a 5th with the azote added to it, and which table, instead of making (when the various degrees in which bone-manure is superior to farm-yard manure are found and added together) the sum of thirty tons, makes but fourteen. The reason of this appears to be in the fact, that the Doctor has not only taken what was contained in the corrected table, but has also made liberal use of the quantities contained in the one preceding, for neither of them will produce thirty tons, unless we use the product of the last article contained in each table twice over.

But again, if we examine further, we shall find that the Doctor has fallen into another error, which if possible is of greater magnitude than the preceding ones. This error consists in making all the component parts of the manures of equal value with each other. As, for instance, in adding together all the various degrees in which bone-dust is superior to rape-dust or farm-yard manure, he puts them all indiscriminately together, and determines the value of the manures, not by the quantity of azote or of some other essential principle, but by the whole bulk of matter, and thus making one hundred parts of saline matter, earthy phosphates, or of any of the other parts, of equal value with the same quantity of azote. To prove this, let us suppose the quantity of azote contained in each to be nothing but some simple substance which possesses very little efficacy, and then try the Doctor's method of ascertaining their respective values. In doing this we find that an overplus of this important gas would have no more influence on them than any article substituted in its place, of a thousandth part of its value. For example, instead of the bone-dust containing 1.77, and farm-yard manure .45 of azote, we will suppose them to contain instead the same proportions of some *almost inert organic matter*; this would make the table as follows:—

One ton of bone-dust equals,

	Farm-yard manure.
As regards organic matter	1 ton
,, ,, soluble matter	1 ,,
,, ,, easily dissolved	2.9 ,,
,, ,, *almost inert organic matter*	3.9 ,,
,, ,, saline matter	5 ,,
,, ,, earthy phosphates ..	18.3 ,,

This, of course, does not alter the result at all, for when they are added together they are still the same, and consequently the bone-dust will be still in round numbers thirty times the value of farm-yard manure. Now, it is evident that the small quantity of an almost inert organic matter, substituted for the azote of the bone-dust, and which would be about an eightieth part of the whole bulk according to his table, could make very little alteration in its value; whereas the same quantity and proportion of azote would make a difference which would be immense; but yet each of these strangely different articles have the same effect in determining the value of manure, according to Doctor Madden's system. This is clearly the case. Then, if we take the Doctor on his own ground, that of determining their respective values by the bulk of matter at all useful as manure which they contain, the proper method will be, to add the quantity which each contains separately together, which will be, according to his own table, as follows:—

	Bone-dust.	Rape-cake.	Farm-yard manure.
Soluble matter	10.2	29.5	10.75
Easily rendered soluble ..	41.5	41.7	14.25
Azote	1.77	4.92	.45
Total organic matter......	33.5	75.5	33.565
Saline matter.............	55	4	19.9
	141.97	155.62	78.915

Which will make the rape-cake of the greatest value, and about double the value of the farm-yard manure. But the Doctor's table which we use being incorrect, to go still more correctly to work, we must take from the hundred parts of each of the manures the quantity of water which they contain, and which will then leave us the total quantity of solid matter. This will leave of solid matter, in bone-dust 88.5, rape-dust 89.5, and farm-yard manure 54.5, which will make bone-dust and rape-dust nearly equal, and of about two-thirds more value than farm-yard manure. This was sure to be the result, for if all their component parts were to be considered of equal value, water excepted, the only difference that could exist would be on account of the proportion of water which each contained. And now Doctor Madden, after these strangely fallacious calculations, asks the following questions:—"Can anything be more satisfactory?" "Where is the necessity of comment?" and "Who will now doubt the efficacy of chemistry for the purpose of unravelling the mysteries of practical agriculture?" As to being satisfactory, surely never anything was calculated to be less so; and so far from being calculated to remove the doubts of the efficacy of chemistry, for the purpose of unravelling the mysteries of practical agriculture, it is calculated to create them; and if any have considered the great fertilizing powers of these manures to be more "magical than natural," these calculations when examined do not at all appear likely to lessen the tendency to such notions.

And now I have to state, in conclusion, that not having had an opportunity for subjecting the three articles in question to an analysis which would determine the quantity of azote contained in each, from the short time allowed between seeing the essay and the publication of the succeeding month, and also from the want of a galvanic battery, therefore I have not been able in this Magazine to give the products of such analysis; and as to bone-dust, I am not aware of ever seeing in any work its component parts (azote included) given as the result of a true and efficient analysis. But if we may be allowed supposition, which is certainly a blind way of going to work, instead of comparing the gelatine with animal glue, we ought much more properly to compare it with albumen, a vegetable and animal production. According to Gay Lussac, and Thenard, 100 parts of albumen is composed of—

Carbon	52.883
Oxygen	23.872
Hydrogen	7.540
Azote	15.705

But then the 33 parts of gelatine were in a dry state, and consequently the albumen ought to be so too, to form a fair comparison. Eight parts of oxygen and one of hydrogen form water, and therefore, if we take these proportions from the albumen, it will be left free from water. When the whole of the oxygen, and one-eighth of the hydrogen, are taken away, it will leave it thus:—

Carbon	52.883
Hydrogen	4.556
Azote	15.705

Which will leave without the water 73.144, and a 4.6 part of this will be azote. And now, if we divide the 33 parts of gelatine contained in bones by 4.6, it will leave us the quantity of azote, which will be 7.2; and this, without allowing anything for the azote which other component parts of the bones might contain. And now, if we allow the azote given by Doctor Madden as being contained in rape-dust and farm-yard manure to be correct, and so calculate the value by the quantity of azote which each contains, the table will be as follows:—One ton of bone-dust is equal to sixteen tons of farm-yard manure, and one ton of rape-dust is equal to eleven tons of the manure. But the bone-dust is calculated without the addition mentioned above, and the quantity given by the Doctor as existing in manure is above an average quantity; but of course there will be such a great difference in the quality of farm-yard manure, depending upon various circumstances, that very great exactness cannot be expected.

I find that Mr. Milburn, in his wisdom, too, has stumbled upon a few wrong figures in his calculation, page 100 (table at the bottom of the page), where he has put component parts as follows:—Easily dissolved .22, azote .4, saline matter .25, earthy phosphates .17; which ought to be—easily dissolved .34, azote .25, saline matter .2, earthy phosphates .054. Possibly he was too much engrossed in the arrangements of his great Yorkshire Agricultural Exhibition, to which he is secretary, to be very exact. It is due to him to say, that this error does not in any way affect the conclusion in general which he has drawn, nor help the Doctor out of the sad blunders which he has committed, for the error in the figures altogether only makes a difference of 0.196 of a ton, which he can well afford to spare.

MULTICOLE RYE (a native of Poland)—A Correspondent furnishes the following particulars of this plant:—It grows on common soil suited to the old fashioned rye, but its habits are totally different. By the reports of above thirty highly respectable members of the Agricultural Society of L'Orient, who have for the last two years been sowing it in various ways, it answers best when sown 1st June. Its growth is most rapid; two crops of it are before July cut for hay, and by the 15th of August a grain crop is reaped; the straw is 8 to 10 feet high, the ear from 10 to 18 inches long. This I have myself seen in the possession of several individuals, and, from their high respectability, I must fully give credit to the two crops for hay, and the grain crop in the middle of August. Indeed an account of it will be found in the Transactions of the Minister of Agriculture and Commerce for 1840-41, Paris. This is the most delightful climate for agriculture perhaps in the whole world,* and I am busy teaching the most ignorant peasantry, and worst farmers in the universe, what can be done in their country. I am certain of growing two, and almost sure of three, crops on the same ground within the year; the climate is now (21st December) as mild as July in England, and I am mowing daily a luxuriant fifth crop of Italian rye-grass for my milch cows. I have here a most delightful, convenient, and comfortable chateau; a splendid river, full of salmon; scenery exquisite; a forest five miles long; extremely kind friends everywhere amongst the French, and am half a Briton already.—Yours, F. A. McK.

ON THE APPLICATION OF THE PRINCIPLES OF VEGETABLE PHYSIOLOGY AND CHEMISTRY TO AGRICULTURE.

BY HENRY R. MADDEN, M.D., PENICUIK.

[CONTINUED.]

(From the Quarterly Journal of Agriculture.)

III. *The Art of Culture,* or the means necessary for keeping up the fertility of the soil.

So much has already been advanced under the two former heads respecting the art of culture, that we shall require little more than a recapitulation in this place, under the following heads:—

8. To keep up the fertility of soil, manure must be added in quantity proportioned to the weight of the crops removed.

9. To preserve fertility a judicious rotation of crops must be established and maintained.

10. To prevent the deterioration of some soils, it is necessary, in addition to the above measures, to have recourse to fallowing.

8. To keep up the fertility of soil, manure must be added in quantity proportioned to the weight of the crops removed. We have no doubt that many who have paid attention to the subject of vegetable nutrition, may be at first inclined to question this statement, but we trust that we shall be able to satisfy them that their doubts are unfounded. By the above statement, we by no means intend to declare that ton for ton the supply of manure must equal the weight of the crops, for this is absurd; but we firmly believe that careful examination will prove that there exists between the crop and the active organic matter in the soil, a proportion so constant and definite, that to keep up the fertility of the soil, we must keep up this proportion; and if we do this by manure, of course it follows that there is a certain fixed proportion between the manure and the crop. Calculation will shew us that although at first sight the gross weight of the crops of a rotation is considerably above that of the manure applied, still, in reality, the amount of the various elementary matters is much nearer an equality, in fact are generally most abundant in the manure. Let us, for example, suppose the following case: An imperial acre of turnip-soil receives 25 tons of farm-yard dung, and yields, 1st, 30 tons of turnips; 2nd, 42 bushels (of 53 lb. each) of barley, with 2000 lb. of straw; 3rd, 200 stone of hay; 4th, 48 bushels (of 42 lb. each) of oats, with 2500 lb. of straw. Now the gross weight of these crops would be 80,342 lb., whereas the manure would weigh only 56,000, and, consequently, the soil has yielded 24,342 lb. more in four years than it received in the form of manure, or at the rate of 6085½ lb. more annually. If, however, we compare separately the relative quantities of carbon, azote, and saline matter contained in the crops

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* Brittany.

and manure, we shall obtain the following results:—

Carbon in the crops, ...	8,183.04 lb.
Azote in the crops, ...	248.61
Saline matter in the crops....	1,191.24
	9,622.89
Carbon in the manure, ...	12,734.4 lb.
Azote in the manure, ...	280
Saline in the manure, ...	6,104
	19,118.4

So that, in fact, there is a considerable excess in the manure of all the elementary ingredients of the crops, if we except the elements of water, viz., oxygen and hydrogen. We trust that this calculation will be sufficient to satisfy all, that there exists a certain proportion between the weight of the elements of the crop and that of the constituents of the manure. We do not, however, affirm that an increase of manure is always attended with an increase of crop, because there are various other conditions requisite to insure the success of any crop, some of which are altogether independent of the soil and its contents.

It has been already observed that much of the food of plants is obtained in the form of carbonic acid contained in the atmosphere, and it becomes therefore of the greatest consequence that the plants should be in a state fitted to make use of this supply, as, of course, every thing obtained from the atmosphere by the crop may be considered as clear profit to the farmer. Now, in connection with this fact, injudiciously managed land may have one of two faults,—1st, from a want of manure the plants may grow slowly and imperfectly, and hence not have a sufficiently large absorbent leafy surface to benefit by the atmospheric supply; or, 2dly, from too much manure the plants may be pushed forward so rapidly that they would require for their perfect development a more abundant supply of carbonic acid than the air can afford them; and, consequently, from a want of due apportioning of the various supplies, the plant cannot reach perfection. These two somewhat counteracting forces have the effect of regulating the produce of soil to a much greater extent than is generally imagined.

(8.) To preserve fertility a judicious rotation of crops must be established and maintained. The necessity of a rotation of crops has now been proved so satisfactorily to every practical farmer, that we need occupy no time in descanting upon its utility. The precise chemical principles upon which it depends are yet somewhat obscure; but still we have been able to decide at least two things concerning it, viz., 1st, that it is required not merely in an economical point of view, although its results tend greatly to lessen the expence of cultivation; and, 2nd, that it is required in some degree for all plants, but becomes the more necessary, according to the value of the crop cultivated. For example, the more azote a plant contains, the less frequently can it be cultivated upon the same spot in uninterrupted succession; or, in other words, the more necessary a rotation becomes in order to preserve the fertility of the soil. A judicious rotation is discovered by a careful consideration of the various circumstances of soil, climate, manure, &c., peculiar to the farm. The truth of this is evident when we remember that the object of the rotation is to obtain the greatest number of crops, after each application of manure, which the soil can yield, without deterioration; or, in other words, to make the most of the manure.

(9.) To prevent the deterioration of some soils it is necessary, in addition to the above measures, to have recourse to fallowing. A great deal has been written upon the subject of bare-fallow, and the question as to its necessity has been keenly contested, as few farmers like to allow a season to pass without getting some return from every portion of their soil. On this account many expedients have been proposed for the purpose of obviating the necessity of bare-fallow, as fallow-crops, &c. But experience has proved that whereas the injudicious use of fallowing in all cases is quite absurd, still some soils absolutely require it. We shall endeavour to point out, as we did in reference to paring and burning, exactly what is effected by bare-fallow, and likewise the cases to which it is most applicable; or rather, in which it is absolutely necessary. The true object of a bare-fallow is to give the soil a year's rest; by which the farmer is enabled to work it more effectually, to clear it of weeds, to allow it to undergo various changes effected by the air, and likewise to destroy insects. These most important effects are produced by repeated ploughings and harrowings, by which means the soil becomes more perfectly pulverized, and hence, as we have already seen, more active. Again, the absence of all vegetation (we say all, for no weeds should be allowed to grow on bare-fallow) has the effect of exposing the soil much more freely to the sun's rays, which act beneficially probably by hastening the disintegration of stony matters, and thus increasing the supply of alkali, and also is effectual in destroying great numbers of insects, which injure our crops, by starving them out from want of food. The cases requiring this operation, therefore, are evidently such soils as are worked with so much difficulty that it is almost impossible to keep them clean in the regular rotation; these are the stiff clays, in which class of soil we doubt if the bare-fallow can ever be altogether dispensed with, although the frequency of its repetition may be greatly lessened by due care, and chiefly by thorough working during the summer that it bears no crop. We think that all other soils can be kept perfectly well without this process, by the intervention of fallow-crops, as turnips, and potatoes; but in stiff clays, we repeat, that in our opinion it is absolutely necessary. The general rule for the application of fallowing is as follows:—Whenever a soil possesses such a texture that it cannot be cleaned, and brought to a sufficiently fine tilth between harvest and seed-time, without interfering with other operations, or when it is overrun with some noxious insect or weed, a clean and well-worked summer fallow must be had recourse to, for the purpose of preserving the fertility of the soil.

We now enter upon the last division of our subject, viz.:—

IV. *The economy of husbandry*, or the particulars regarding each individual crop, which are necessary to be known in order to its successful cultivation. Before examining each crop in succession, as we purpose doing in this portion of our essay, we beg to call attention to several general facts regarding vegetable physiology which have been discovered, and which will assist us greatly in understanding and determining the peculiar culture fitted for each crop.

1. All plants require a good supply of nourishment during the first periods of their growth, for without this they will never arrive at perfection. If, therefore, nature has not provided a stock of nourishment laid up in the seed, it must be supplied artificially. Seeds, therefore, which are devoid of this natural supply of food, must be provided with an abundance of well fermented manure, unless it is required that the first stages of their development should occupy a considerable period of time.

2. Many plants have more than one method of propagating themselves; if, therefore, one method is more desired than another, means should be used to prevent the others from being accomplished, as by preventing the one, you increase the vigour of the other.

3. Plants lay up a store of nourishment for the next year, either in the wood, as in perennials, or in the seeds, as in annuals.

4. The starch of plants is always contained in cells, formed of a substance containing azote; and, consequently, there exists a fixed proportion between the quantity of azote composing the cells and the amount of starch contained in them; hence it follows, that to increase the quantity of starch in a plant, you must increase its supply of azote, although starch itself contains no trace of this element.

5. In all parts of a plant there is an exact proportion between the various elements entering into its composition, so that an addition to one of them is necessarily followed by a relative addition to them all. If, for example, a plant possesses one part containing 2 grs. of azote, combined with 18 grs. of other elements, and another portion containing 2 grs. of azote combined with 48 grs. of other elements; if we, by any means, prevent the development of the more highly azotised portion, viz., the 2 to 18, we shall produce a proportional increase in the other; so that, by preventing the formation of 20 grs. of the highly azotised portion, we obtain 50 grs. of that which contains proportionally less azote.

These five facts will assist us greatly in the following explanations regarding individual crops:

a. The Turnip.—This plant is cultivated for the tuberous portion of its root; the bulb of the turnip contains the supply of nourishment required for the development of the flower and seed in the following year; the turnip has a large system of leaves, contains much water, is not highly azotised; the seed possesses a very small supply of nourishment; the whole success of the crop depends, within certain bounds, upon the rapid development of the large absorbent leafy surface. Hence the culture of the turnip must be conducted as follows:—The soil must be sandy; 1st, because it is a law that plants make preparations for retaining in their own texture most water when the soil around them is capable of retaining least; 2d, because its development must be rapid, and hence the decomposition of manure must be rapid likewise.

There must be a good supply of very active manure, so that the seed may be provided with abundance of food in the first period of its growth, and thus have its leaves developed as rapidly as possible (within certain limits of course.) As the plant is not highly azotised, it can draw the greater portion of its nourishment from the air, provided the absorbent surface of the leaves be sufficiently large; hence it is more necessary to attend to the quality than the quantity of the manure for this crop. A small quantity in a very active state will prove much more valuable here than a large quantity which is too fresh.

As the size of the bulb is regulated by the size of the surface of its leaves, this crop must not be too crowded, but plenty of room should be left to permit of the full development of the leaves.

b. The Potatoe.—Several circumstances require attention regarding this plant, in order that it may be successfully cultivated. The potato differs essentially from the turnip, in that the portion used is a perfectly developed part (if I may use this term without fear of misinterpretation,) that is to say, a part which is perfect in itself; for instance, the bulb of the turnip is merely a deposit of nourishment for the use of the plant during the ensuing spring, and if removed from the soil cannot be made to produce a new individual; whereas the tuber of the potato is as much a perfect individual as any seed, for it contains within itself all that is requisite for the propagation of the species. On this account, therefore, the potato may be considered as perfectly developed when the tuber is ripe; whereas the turnip has merely advanced a certain way towards perfection, which cannot be said to occur until the seed is formed. Now, the importance of this distinction will be seen, when we remember that all plants deteriorate the soil most during the latter periods of their growth, and hence it follows that *cæteris paribus*, the potato is a more exhausting crop than the turnip.

The potato, like the turnip, has a large system of leaves, and contains much water. It is more azotised than the turnip, but the portion containing the greatest quantity of azote is not developed until during the later periods of the growth of the plant. It possesses two ways of propagating its species, viz., by seeds and tubers, and whatever prevents the development of the one increases proportionally that of the other; this proportion being regulated by the quantity of azote. The success of the potato depends greatly upon a due balance between the quantity of nutriment afforded respectively by the soil and the air, because the tuber consists of a large deposition of starch in cells, composed of an azotised matter. Now, as the soil provides the material for the cells, and the carbonic acid of the starch is derived chiefly from the air, it follows that if one or other of these supplies be in excess, a due proportion will not exist between the two ingredients of the tuber. Thus, if the soil be very rich in azotised matter, so many cells are produced that the leaves cannot eliminate starch sufficient to fill them on which account; the potato is of that peculiar consistence termed "*waxy*." If, again, the soil is deficient in azote, only a few cells are formed, and these are completely filled with starch, and the potato consequently becomes "*mealy*."

With regard to the order of development of these parts, the cells are first produced and become filled with starch subsequently; and as this is formed by the leaves, any thing which injures them, such as frost, &c., checks the production of starch, and the potato remains either waxy, or, what is worse, soft and watery. Now, a review of these facts would lead to the following suggestions regarding the culture of this plant:—

1st. There must be an abundant supply of manure, because not only must the leaves be quickly developed, but the soil must be in a condition to yield azote abundantly even during the latter period of the growth of the plant; hence *small quantities* of active manure will not succeed nearly so well with this plant as with the turnip.

2nd. The manure need not be so well prepared, as the greatest supply of azote is not required until some time after the plant has risen above ground; but it must not be too fresh for fear of retarding the development of the leaves, nor *too hot*, for fear of acting injuriously on the seed-tuber.

3rd. We must not give this crop too much rich manure, for fear of making a greater demand upon the atmosphere than it is capable of answering.

4th. The plants should be placed far apart, so as to permit of the free increase of the leaves.

5th. As the potato has a spreading root, and the tubers are nearly all developed upon the under surface of the fibres which run most horizontally, it is very injudicious to earth up the plants, as this of necessity renders the roots more perpendicular. Experiment has proved that this practice occasions considerable loss.

6th. To obtain the largest number of tubers, the flowers should be plucked off to prevent the formation of seed, while everything should be done to protect the leaves from injury.

7th. The soil for the potato should be loose, although this plant will grow in a much greater variety of soil than the turnip. This also depends upon the tubers being a completely developed portion, destined for the production of a separate individual; whereas the bulb of the turnip is for the purpose of supplying the plant during the most important period of its growth, viz., during the development of the seed, with abundance of moisture and nourishment, when growing in a soil which cannot naturally retain these; and, therefore, if we attempt to grow the turnip upon stiff soil, it either does not flourish at all, or else the bulb is very imperfectly developed, for in this case the soil can supply all that is required without the assistance of this artificial reservoir.

c. *Wheat*, *Oats*, and *Barley*.—All of the cerealia agree in so many respects that it will be advantageous to consider them together.

1st. As they are cultivated for their seed, they are perfectly developed before harvest, and, therefore, exhaust the soil to a much greater extent than green crops.

2nd. As their system of leaves is very much less than that of the plants before considered, they are much more dependent upon the soil even for those elements which larger leaved plants obtain from the air.

3rd. As the seed is in all instances the most highly azotised portion, and as it is the last part developed, it follows that these plants require more a *general richness* of the soil than a supply of newly added manure. On this account, it is with propriety, therefore, that they are seldom made to follow close after the application of manure, but are either preceded by a green crop, or are sown after summer fallow.

These crops differ among themselves chiefly as regards soil and climate; wheat requiring clay, barley a lighter soil, and oats succeeding pretty equally on all good soils, of whatever texture they may be. The same is the case concerning climate and the richness of the soil; wheat requires the best climate and the richest soil, then barley, and then oats. It is not easy to explain this satisfactorily, for although we can produce many circumstances which appear to explain the differences in question, more careful examination will prove that they can merely be considered in the light of probabilities, and by no means as certainly ascertained facts. For example, if we examine the ashes of these three plants, we find that their quantities amount proportionally to 3, 2, and 1—wheat containing the most, and oats the least; and if we examine still further, we shall find that clayey soil is more capable of yielding the ingredients of these ashes than land of a lighter texture. This renders it probable that one of the causes of wheat requiring clay depends upon the necessity of a larger supply of these earthy particles; but accurate calculation also proves, that many plants which grow best on sand remove from it a greater quantity of these very substances than would be required to supply the heaviest crops of wheat. It cannot, therefore, be considered as proved, that the cause of wheat prefering clayey soil, depends upon the greater quantity of earthy matter required for its perfect development, although we may venture to advance as a probability, that it depends upon an increased facility of obtaining this supply. Again, these three crops require a considerable supply of azote during the latter periods of their growth, the proportion being, wheat 2.13, barley 1.76, oats 1.96; so that here again, since we know that decomposition proceeds more slowly in clay, and the azote of the manure is hence not so quickly given off, we might argue that clay would be better fitted for wheat. Chemical analysis, however, proves in this case also that some crops peculiarly suited to sandy soils contain a much larger *absolute quantity* of azote, although it must be admitted that the relative proportion is much less. Our conclusion here also must therefore be, that the cause of wheat thriving best upon clay depends *probably* upon its receiving azote in a greater degree of concentration.

d. *Beans*, *Peas*, and other *Leguminous Plants*.—Very little can be said regarding these in the present state of our knowledge, as but little particular attention has hitherto been paid to them by the scientific enquirer, and there are so many peculiarities exhibited by them, that it would be very imprudent to risk an opinion upon so meagre a collection of facts. Beyond all doubt these are the most hazardous crops we cultivate, as they are so very much influenced by the weather. Clover, for example, is a plant, the success of which we can scarcely in any instance predict, as, no matter what the state of the soil may be, a few days of unfavourable weather may destroy at once all prospect of success. We may, however, notice *one fact* in this place, although we shall not attempt its explanation, viz., that the nitrates of potass and soda, two very favourite manures, appear to exert an almost magic influence over clover in rendering it much more certain and luxuriant.

We have now completed our review of the facts already explained by science, and we trust that our practical brethren will have reason to conclude that our time has not been wasted, but that really considerable advances have been made of late by scientific enquirers, so that we may hope soon to see the farmer and the philosopher pressing forward hand-in-hand in the field of agricultural improvement.

Before concluding, we purpose copying a few interesting tables connected with our subject, and likewise to exhibit the practical tendency of several of the observations in the body of the essay, by applying them to particular cases; this we shall do in the catechetic form, the farmer being supposed to propound the questions, while the philosopher produces the answers.[*]

I. Table shewing the relative nutritive powers of various articles of food, deduced from the quantity of azote which they contain. Arranged from M. Boussingault's tables.

VARIOUS KINDS OF FODDER.

NAME.	Amount per cent. of Solid Matter.	Amount per cent. of Azote.	Value compared with Hay as 100.
Hay from Red Clover in flower	83.4	1.76	60[†]
Vetch Hay	89.	1.41	74
Lucerne Hay	83.4	1.35	75
Common Hay	88.8	1.04	100
Green Clover	..	.50	208
Potatoes	7.7	.37	281
Green Lucerne	..	.30	347
Carrot	12.4	.30	
Wheat Straw	80.7	.20	520
Barley Straw	89.	.20	
Oat Straw	79.	.19	547
Rye Straw	87.8	.17	611
Turnips	8.2	.17	612
Beans	92.5	5.11	20[‡]
Vetches	85.4	4.37	24[‡]
Kidney Beans	95.	4.08	25[‡]
Lentils	91.	4.00	26[‡]
Yellow Peas	83.3	3.40	31[‡]
Wheat Flour	87.7	2.27	46
Wheat Grain	89.5	2.13	49
Rye	89.	2.04	51
Oats	87.6	1.96	54
Barley Flour	87.	1.90	55
Barley Grain	86.8	1.76	59

II. Table showing the composition of the Ashes of our most frequently cultivated crops. From Saussure and other authorities.

NAME.	Ashes in 1000 parts.	Constituents of 100 parts of the Ashes.				
		Soluble Salts.	Phosphates.	Earthy Carbonates.	Silica.	Metallic Oxides.
Wheat Grain	13.	47.16	44.5	..	.5	.25
Wheat Straw	43.	22.5	6.2	1	61.5	1.
Oat Grain	31.	1.	24.	..	60.	.25
Barley Grain	18.	29.	32.5	..	35.5	.25
Vetches	33.	69.28	27.92	..	..	0.5
Turnips	5.8	..	..	..	..	..
Potatoes	5.9	..	..	..	..	..

III. Table showing the quantity of Alkali associated with the various Minerals entering into the constitution of soil. From Liebig.

Name of Mineral.	Per cent. of Alkali.	Name of Alkali.
Felspar	17.75	Potass.
Albite	11.43	Soda.
Mica	3 to 5	Soda.
Zeolite	13 to 16	Soda and Potass.
Basalt	5.75 to 10	Soda and Potass.
Clayslate	2.75 to 3.31	Potass.
Clinkstone	14.	Potass.
Loam	1.5 to 4.	Potass.

Analysis has proved the existence of more or less potass in all clays, as also in marls. From this table it would appear that by far the best soil would be that originating from the disintegration of felspar; and we think that observation will often prove this to be the case.

THE DOWNSHIRE STEAMING APPARATUS, AND IMPROVED CHURN, BY RICHARD ROBINSON.

This invaluable apparatus has been now for some time before the public, upwards of one hundred of them having been erected for the various purposes to which steam is applicable, viz.—for preparing food for horses, cows, and other stock; for heating conservatories, green-houses, steam and hot baths; brewing, churning, laundry, and culinary purposes; heating dairies; boiling cloths, yarn; and for drying lofts, &c., &c., all with one fire, combining economy of fuel with simplicity, despatch, and perfect safety.

Richard Robinson cannot omit this opportunity of returning his sincere thanks to those noblemen, gentlemen, farmers, and managers of public institutions, who have had this apparatus erected, for patronising his efforts to such an extent in so short a space of time, thereby clearly proving that the apparatus is a truly useful one, and which the numerous letters of approval received by him also testifies. On other page a descriptive drawing of the simplest form of the apparatus is given with the improved churn. *It can be made of any size or proportion in its different parts, varying according to the extent of work required to be done, preparing any kind of food for cattle from twelve bushels* per hour upwards, and to which additions and connecting pipes can be made for any of the other purposes before mentioned. As regards lowness of original cost, and of working safely while in operation and despatch, this modification of the use of steam is the most perfect which has yet been introduced for the purposes to which it is adapted; a fact established by the opinions of eminent agriculturists, who have tested its advantages and compared them with others hitherto in use (reference to whom may be had on applying).

Richard Robinson, from his long practical experience in the application of steam to the purposes of brewing, distillation, evaporation, boiling, &c., &c., will undertake the erection and fitting up of steaming apparatus for these and culinary uses on the most approved and economical principles. To poor-law guardians and managers of public institutions, he would particularly point out the saving derivable from the application of steam to cooking, (the superior quality of the food thus prepared), to washing, heating apartments, &c. For these and all other purposes his newly improved boiler offers most superior advantages, and for the generating of steam at the lowest possible cost. The churn introduced from France by Mr. Blacker, offers to be one of the most valuable additions to the dairy as remodelled by R. Robinson. His improvement consists in using steam as the heating medium, instead of a tub of hot water as recommended by Mr. Blacker. A thermometer can be placed in a secure manner, so that the temperature of the cream or milk can be observed and regulated; for which purpose a pipe and cock are attached connecting the churn with the steaming apparatus, and by merely turning the cock steam is admitted or shut out, and the temperature thereby accurately managed. The process of churning, which has heretofore been considered one of perplexity and uncertainty, is thus rendered a matter of comfort and despatch, occupying only a few minutes, and producing the sweetest butter that can be made; for it is not necessary to hold milk or cream over till sour, as either can be churned on the second or third day after coming from the cow. Any quantity, from three or four quarts upwards, can be daily operated on, and thus fresh and sweet butter can always be obtained. These churns, as constructed by R. Robinson, can also be used by having water as the heating medium, although steam is certainly preferable, being more economical and more easily managed. R. R. has ascertained that by varying the temperature the process of churning may be accelerated or retarded at will: the best butter however is obtained by the slower process.

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[*] These Questions and Answers will be found in the *Farmer's Magazine* for June last.

[†] That is to say, that 60lbs. of red clover hay contains as much nourishment as 100lbs. of common hay, and as 612lbs. of turnips.

[‡] *Leguminous* plants alone will not prove so nutritious as the cerealia, because they do not contain a sufficiency of phosphates which are required for the production of bone; they are therefore most useful when conjoined to some of the following grains.

Fig. 1.

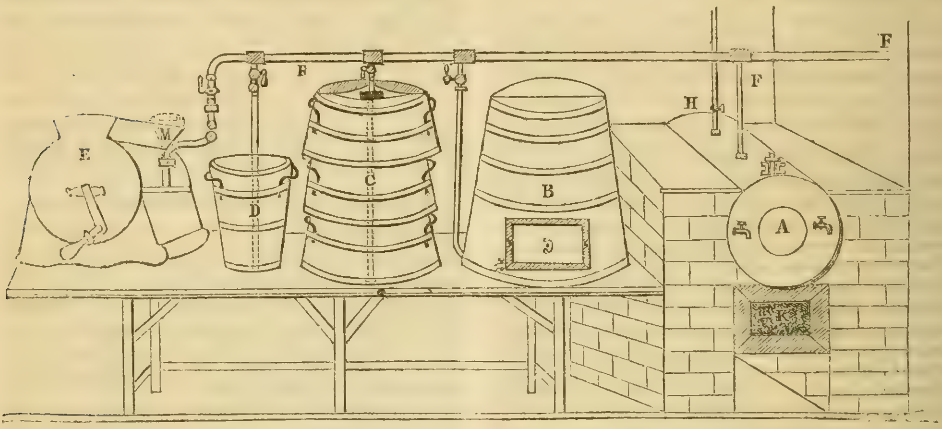


Fig. 2.

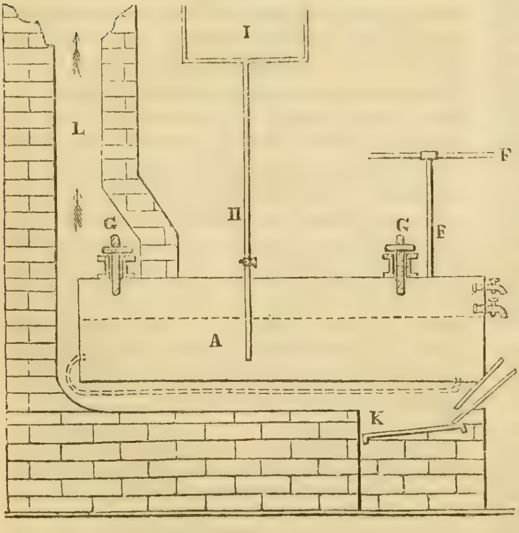
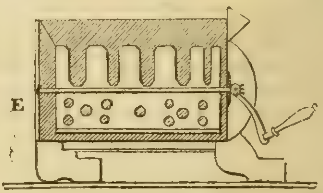


Fig. 3.



REFERENCE.

Fig. 1. Front view of apparatus and churn.
Fig. 2. Section of steam boiler and furnace.
Fig. 3. Section of churn.
A. Steam boiler.
B. Large vessel for chaff, cut hay, turnips, &c.
C. Three or more vessels, on each other, for potatoes.
D. Vessel for hot water, stirabout, or other culinary purposes.
E. Churn as it may be attached to the apparatus to be heated by steam.
F. Steam pipes.
G. Two safety valves.
H. Water supply pipe.
I. Water cistern.
K. Furnace.
L. Chimney.
M. Tundish for hot water to the churn when steam is not used.

BURTON UPON TRENT FARMER'S CLUB.

March 24th, 1842.

ON THE BEST METHOD OF MAKING CHEESE.

BY MR. WM. DANIEL.

In responding to the discussion fixed for this evening, namely, "The best method of making cheese."—I am aware of the great importance of the subject I have undertaken, and of the presence, probably, of some of our members better qualified than myself to instruct others in the manufacture of an article of such great consequence to the producers of milk, that his wife or his dairymaid may turn it to the best account, and succeed in making such a dairy produce as will command in the market the best price.

After the master or dairyman has done his duty in the supply of milk of the best quality, it falls under (generally speaking) female management, and to produce a good cheese three words will suffice, viz., *time*, *cleanliness*, and *industry*. Short, however, as this observation may be, I beg to add a few remarks. The business of cheese-making is a regular and constant proceeding, practised perpetually, everyday, from time immemorial, and it seems strange, that when the ingredients employed are so few, and their nature also so regular and certain that there should be much difficulty in producing the article pure and complete. But daily experience proves there is an amazing difference in the goodness and quality of cheese, insomuch that you can scarcely find two dairies that are exactly, or even very much alike. Much probably depends on the situation of the cow pasture being nearer or further off the house where the cheese is made, as cows driven any considerable distance before milking causes the milk to heat in their bags in summer.

Milking them in the field, and carrying the milk on horse-back in churns or barrels is still worse, as this mode of conveyance home disturbs the milk, inclining it to the nature of churning cream for butter, and occasions probably a difficulty in bringing the cheese, or fixing the curd in the pan; and instead of one hour—the time commonly given by dairywomen in bringing the cheese—it will frequently not come in three or four hours, and then in such an imperfect state as scarcely to be capable of being confined in the press. Whenever people find their cows in this situation, which in hot summer evenings often happens, then it is that making use of a little cold spring water before rendling is useful, as that inclines the runnet to take effect. Experience shows this will not hurt the milk or impoverish the cheese, but the water added—say a quart, two, three, or four, or more, according to the quantity of milk to be cooled—just so as to reduce it to the temperature of what is called (or felt to be) new milk warm (a term generally understood); or if a thermometer was used in such cases, it would regulate a fault of putting milk together too hot. As soon as the milk appears of a proper warmth, and before you put in the runnet, put a handful or two of salt into the pan, about two handfuls to the milk of ten or twelve cows, remembering that cheese will afterwards want a less quantity of salt than if none had been put into the milk. The thing that more dairywomen err in than any other, is gathering or sinking the curd too soon. A very material circumstance to be attended to, is the time allowed for the runnet to take effect, which should on no account be less than an hour and a half. It may happen, and often does, that it will come sooner, but I believe it will be found that the additional time given will never be of any bad consequence, as the curd on sinking becomes more solid, and prevents what is called slip curd, which will never unite with the solid curd, and when any is found in the cheese pan it had always better go along with the whey. In regard to the preparation of the runnet for use, the most approved way is to take pure spring water—a gallon of water for two skins; boil the water, which makes it softer or more pure; make it with salt into brine that will swim an egg; let it stand till the heat is gone off or till it becomes blood warm, then put in your maw skins, cut in pieces; let it steep twenty-four hours, when it is fit to use; and observe that too much runnet causes cheese to be strong, too little makes it mild, and must have more time. About a teacup to the milk of twelve cows will generally prove about the right quantity. Although I have mentioned as a rule, that cheese should not be stirred in the pan or gathered under an hour and a half, I have reason to believe the best managers generally let it stand two hours.

That good cheese may be made on any land I am quite prepared to contend; and one proof of this assertion is, that in this very parish too adjoining dairies varied so much, that one might be termed very good the other an inferior dairy. The then agent to the Marquis of Anglesea thought it convenient to change the respective cow pastures, one for the other; the result was, the best dairy of cheese remaining under the same management continued the same best dairy, and the inferior dairy continued so still, notwithstanding the change. Very much depends on the condition of cheese, after all other necessary attention has been paid in the making; if not well and cleanly kept till the time it is advisable to sell, the value is lessened. An equal temperature is evidently necessary, especially in winter, and if kept on a cold plaster floor with a northern aspect, it is sure to suffer and get out of condition; but when a boarded floor (not in a garret) can be used for keeping cheese through the winter, it is very much preferable to a plaster floor. Neither in summer is it well to keep hard cheese and soft cheese in the same room.

To have every excellence it should have every advantage.

I have no doubt good cheese may be made by rule on any land, provided no pernicious weeds or plants, or distempered cattle, prevents. It often occurs that the best cheese is made on poor land, the milk being thinner will sooner curd than rich milk; but if from rich old turf, and proper time is given to make good curd, and the cheese well attended to, no doubt the richer grass makes the finest cheese, and more of it. Cheese from clover is the most difficult to make, even with the best dairywomen, but good stout, full-flavoured cheese may be made from clover, if a good deal of time is given. Nothing is more commendable in dairy proceedings than cleanliness, and every person in looking over the utensils and viewing the whole business of making and keeping cheese till fit to offer for sale, but must admire cleanliness.

In regard to the best sort of cow for dairy purposes, I do not venture an opinion. It is well known some dairy farmers in this neighbourhood greatly prefer the short-horns; others still prefer long-horns; and more of the latter would I think be kept if they could be found.

OBSERVATIONS ON THE SYSTEM OF MAKING AND APPLYING FARM-YARD MANURE.

Farm-yard manure may justly be considered the main spring by which ploughed land is kept in that state of cultivation and condition which is necessary to the production of such crops as will remunerate the farmer; and therefore the most judicious mode of making and applying it, is of the greatest importance to him.

First, the size and form of the fold-yard is worthy of notice; it should be proportionate to the extent of the farm, and the form sloping gradually from all sides to the centre; the latter should be at least one yard lower than the sides, and the drainage from the manure should not be suffered to escape at too low a level. The droppings from the buildings should not be allowed to inundate the yard, but be conveyed away by a channel to the sough, which takes away the drainage out of the yard.

The number of cattle kept in the yard should be adapted to its size; that is to say, there should be as many as are necessary to trample down the straw, and saturate it well with their own dung and urine, but not more than can exist in it with comfort and advantage to themselves. The cribs which they eat out of should often be moved, otherwise the manure where they stand will be dry and very inferior to that in other parts of the yard. The quantity of straw given to the cattle must depend upon circumstances. If you have extensive piggeries, and a good number of horses in the stable, and feeding cattle in the sheds, the yard will require more straw than if these offices were upon a less scale, as I consider the principle art of making manure is the effectually mixing of the various kinds from these places with the straw-yard manure. For this purpose it should be regularly spread over the surface of the yard whenever the above places are farmed out; this being properly attended to, the whole of the manure will be very good; whereas if it is not, that from the cow-sheds, piggeries, and stables, will be very much better than that which is merely made from straw; and it generally gets used without any distinction except that it is laid on thicker because it is more decomposed, and consequently goes in a less compass, and does not appear to be spread so thick on the ground, while that made from straw only is scarcely worth carting out.

I am aware it may be urged that the manure might be mixed when it is carried out. To this I would reply that it is not always drawn out of the fold-yard until the time it is laid upon the land; and, secondly, the yard is the best place for mixing it, because it is more immediately under the eye of the master, and therefore more likely to be properly done.

In the foregoing observations I am presuming that the piggeries, stables, &c., are contiguous to the yard, and that the mixing may be done with facility by a wheel-barrow; but if this should not be the case, I feel confident it would answer very well to draw it some distance to mix with the straw yard manure.

It is very desirable that the cattle should be watered in the yard whenever this is practicable, and not be permitted to go out of it for that purpose, for it is immediately after drinking that they generally empty themselves, and that is the time above all others they should be in the yard. If they could have a few turnips while they are eating their straw, it would be a great improvement to the manure.

Upon this principle of making the manure, the act of filling it when it is taken out, or that of throwing it up in the yard, which is the custom with some, would mix it sufficiently. If the yard is large enough to contain the manure without inconvenience, it should not be carted out more than six weeks or two months before it is applied to the land, because its strength evaporates less in that situation than in any other; and as it is most desirable to retain all the strength and essence you can, it should only be turned over once after it is carted out.

This brings me to the second part of my subject, viz.—the application of it.

Upon this point there are a diversity of opinions—some preferring it in a totally green or raw state when it is applied; others very rotten—or, as the term is, spit manure; a third class like it best in an intermediate state, and from the little experience I have had, I confess I greatly incline to the latter opinion, for the following reasons:—If the manure is put on in a very green or raw state, the land seldom gets a sufficient quantity to keep it in good heart and condition; secondly, it is next to impossible to bury it with the plough, and mix it well with the soil; thirdly, it has not undergone that process of fermentation which is necessary to destroy the various kinds of destructive insects which infest the farm; and if the sun shines upon it only one hour before it is ploughed under, it literally becomes straw, and is of very little value as manure.

Again, I do not think manure should be in a very rotten or decomposed state before it is laid on, because that fermentation and decomposition which has been going on to bring it to this state should take place after it is put into the land, when the soil and the crop would have the full benefit of the strength and essence which has been uselessly expended in the air, and therefore I should prefer it in an intermediate state. It should be in its highest degree of fermentation when it is applied, and it should not be permitted to lie many minutes (if it can possibly be avoided) before it is ploughed in. It should not be buried very deep, because there is a natural tendency in all substances to go downwards. Further, it is the practice with some persons to put on their manure a long time before the seed or corn is sown. I totally disapprove of this system; and it may be considered something like a sportsman *letting fly at his game before it is in his sight.* I am decidedly of opinion that the nearer you spread the manure to the time of sowing the crop, the greater will be the general benefit derived from it. Upon a contrary system it is clear much of its strength must have been expended in the encouragement of weeds, &c., and uselessly as regards the crop.

There are also different opinions as to the practice of spreading manure broadcast, and that of putting it in the ridges for turnips. I am of opinion that better turnips may be grown upon the latter system, but the general condition of the land would be more improved by spreading it broadcast;

and even in this case it is desirable that the turnips should be ridged, upon which plan the facility of keeping them clean is so much greater than if they were sown broadcast.

The particular period when the manure should be applied must depend upon the condition of the land and other circumstances. Upon turnip and barley soils when you sow the turnip crop is unquestionably the best time to put on the manure; if it is a bean and wheat soil, perhaps, as a general rule, it may be right to apply it when the heaps are sown. Not professing to know anything of chemistry myself, I touch upon the following subject in the hope some person will take it up. The drainage or liquid which escapes from the fold-yard is seldom turned to so good an account as it might be; it certainly never should be suffered to run away without being in some shape or other applied to the land. First, it might be beneficially used in irrigation, or it may be caught in a reservoir and mixed with soil, and I think it may be carted to ploughed land with great advantage; for it is lamentable to see the very essence of the manure running away down the ditches without in the slightest degree benefiting any part of the farm.

WEST SUFFOLK AGRICULTURAL SOCIETY.

At a recent meeting of the above society, some practical remarks were made which deserve to be placed before our readers, as they may be the means of inciting discussion on the several heads touched upon, and draw forth more particular and detailed information.

The Rev. D. Gwilt said he would take the hint thrown out by the Chairman, and endeavour to find something to interest them. Mr. Gwilt produced a plant called the prickly comfrey, which the farmers would find of very great service to them; it would grow in any nook or corner upon their farms, and was well adapted for green food for animals. It produced sixteen tons per acre, and had never been manured. He had kept fifteen horses upon it, mixed with a few oats, and they liked it very well, giving the cuttings to the pigs. It was cut three or four times in the year, and required a great deal of room to grow. Cattle would always eat it; the bull for which he gained a prize had been fed upon it in turn. Another plant he produced, sent to him by the British Agricultural Society, called the Siberian vetch, which was doing well, and it was said would arrive at the height of twelve feet, but he doubted much if it would come to such a height, for he had tried it some time. He was fond of trying new things, and hearing of Mr. Daniel's manure, which was spoken of so well by Mr. Webb Hall, he sent for a couple of casks to try it. He used it for both wheat and barley, and it did well both in broad-casting or drilling; but great care must be taken not to let the grain come in contact with the manure. As a proof of this, he had tried it in dibbling, putting a piece in with the grain, and he found the plant did not appear; but in the broad-cast and drilling neither suffered. There not being any rain was rather against the experiment, as it was necessary for the plant to receive the ammonia through the medium of moisture; but still it did admirably. He had also received another cask of manure from America, called Guano, and tried its effect upon barley, but it did not do so well for want of rain. But he felt satisfied that it would be of great service to the agriculturist. Not being able to grow barley after mangel wurzel, he tried a stetch with lime and salt, and another with pigeon's and rabbit's dung, and found the crops to be much better. The Bath manure would be a great discovery, and he thought they would be enabled to make it at Icklingham, at the rate of 9s. per acre, it requiring twenty bushels per acre,. The Guano might be had at 28s. per acre, and the Bath manure at 15s. In using the Guano he would advise them to apply a quantity of charcoal, as it would collect a great quantity of the ammonia, and give it out better to the plant, being imperishable.

The President said it was hardly fair to call upon Mr. Gwilt again for a speech, but he begged to propose his health. *(Cheers.)*

The Rev. D. Gwilt returned thanks, and said it always afforded him much pleasure in attending their meetings. He thought clergymen had always a right to attend, and he was sorry to see that there were not more of his brethren present, for they were greatly interested in the prosperity of agriculture. *(Cheers.)* At the present time it was necessary for them to use the greatest economy, and he was sorry to recommend that, on account of trade. The Scotch farmers were very economical, and the English would do well to follow their example. They (the Scotch farmers) were surprised at the quantity of harness which the English farmer put upon his horses; and they made one horse do the work of three of ours. They also lived more cheaply, paid much higher rent—as much as 8*l*. or 9*l*. per acre for arable land. *(Cries of "How can they pay it?" "They must grow gold-dust," and laughter.)* Having land at a considerable distance from his house, he had derived much benefit from having a homestead in that part, and he would tell them how he accomplished it. A Scotchman and his wife had been working for him, and the man requesting leave to build a place for himself and wife upon the heath, he consented, and in the course of three or four days he found the man had already raised the walls, which were built of ling, and of a considerable thickness. He had it roofed for him, and they were now living very comfortable and happy in it. He then ordered a cattle hovel to be built, and sent up some short-horns, and he now got a good supply of manure. That was what he called his "Scotch farm." Such things must be attended to if they would do well. *(Cheers.)*

Mr. Shillito had much pleasure in hearing what had been said by Mr. Gwilt, but would like to know how 8*l*. or 9*l*. per acre could be paid. If such a notion got abroad persons would think they had their farms almost for nothing. *(Cheers.)*

Mr. Gwilt explained the advantages the Scotchmen had over the Englishmen, as he had already stated.

The President said he knew of some land in Mid-Lothian, one acre of which [was worth three of ours.

Mr. Gayford expressed his surprise that 8*l*. or 9*l*. should be paid for an acre of land, however cheap the labour might be. He had been in Scotland, and knew that the Scotch farmers used very great economy, and had seen some excellent land. On his way to Edinburgh, he came to a piece of land for which a gentleman on the coach told him he paid 3*l.* per acre, and he went on at great length praising the Scotch system of farming. At last another gentleman, who was sitting by, explained the matter; he said they had five roods to the acre, and leases of twenty-one years. (*Laughter and cheers.*) This allowed them to work the farm to advantage, and with some fair prospect of reward. (*Cheers.*) They also paid their labourers in kind, only giving them money at the end of the year; and the men were bound to let their wives work for 6d. per day. That somewhat explained the matter; but he thought that Scotchmen did not always confine themselves to the truth in stating their agricultural affairs.

Mr. Gwilt said he did not speak of this to the prejudice of the English farmer. He was aware of the trouble, anxiety, and difficulty with which they had to contend, and he always wished to see the farmers doing well.

Mr. Shillito said at one time he used to grow carrots for his colts, and had been much disappointed at the result; he had since found Swedish turnips to be far superior. He thought potatoes mixed with barley meal excellent food for pigs, and better than using the meal alone; he had steamed as many as fifteen sacks of potatoes per week for that purpose. He was also convinced that raw potatoes were far better for beasts than mangel wurzel. It was necessary to mention these things, that farmers might not depend upon one kind of food.

Mr. Gwilt said that if he had Mr. Shillito's farm he would not grow a carrot at all. He was sure Swedes were far superior for colts.

Mr. Denton said that he found that feeding cattle upon potatoes alone made them dropsical, which was sometimes mistaken for fat. He would advise them to be cautious in trying experiments with manures, and when they did to confine it to their gardens; he had tried many experiments, and they had failed. He did not like that system of economy so much talked of, and he would recommend the farmers to give their labourers a quart of beer a day, so that there might be a greater consumption of barley. (*Cheers.*)

Mr. Hooper Wilkinson said he thought some misapprehension might arise in consequence of the remarks made by Mr. Gwilt respecting the rent paid by some Scotch farmers, for he felt quite sure that a rent of 8*l.* or 9*l.* per acre would not be a common rent in the Lothians; if such a rent ever had been paid, it must have been under very peculiar circumstances indeed. He could not at all agree with the sort of parsimony recommended to meet the anticipated loss to the farmer, arising from the recent changes made in the laws for the protection of agriculture; for he believed it was necessary that their horses should be kept in good condition, that they might be able to do their work quickly and well; and unquestionably the manure made by horses well kept was much better than that made by half-starved animals; and he thought by not keeping in view the reputation which Suffolk now held for its fine breed of cart-horses, a considerable revenue might be lost to the farmers in the county, by losing their trade in those animals, many of which were sold into distant countries and to foreigners; and every one at all conversant in horses would allow that condition was very essential to perfecting the shape. He felt certain that the Scotch farm which Mr. Gwilt had established was not intended as a model farm, to be imitated by others through any pressure of the times which might arise, but the comparison which he had drawn between the Scotch and Suffolk farming might lead some interested parties in certain quarters to say that great profits were made by agriculture, which as a practical man, and one who kept very accurate accounts, he (Mr. Wilkinson) positively denied. He believed that no trade or profession yielded less gains, and that the present rents were generally as much and more than tenants could afford to pay; and he felt certain that no Suffolk landlord would wish to see his tenants living in the way that the Lothian farmer had been represented to do. He should not have thought it necessary to take so much pains to deny the exaggerated statement of Mr. Gwilt, had he not thought that much misinformation might get abroad through such a statement being given in the public journals, coming from so experienced and skilful an agriculturist as Mr. Gwilt, unless it were acknowledged by Mr. G. that he thought he had been completely misinformed and deceived.

[We are informed that Mr. Gwilt said, across the table, that he had been misinformed.]

RUGELEY FARMERS' CLUB.

30th September, 1841.

MR. TURNOR'S REMARKS ON THE ROTATION OF CROPS FOR STIFF CLAY LANDS.

In bringing this subject before the meeting, I am well aware that it is one upon which many conflicting opinions are held, and that I shall stand in need of great indulgence from the members present, many of whom have had much experience in the cultivation of this description of land.

I believe it is admitted by most practical men, that no class of soils are so difficult to manage as thin soils, on a very stiff retentive bottom or subsoil; and I am inclined to think that the system of cultivation best adapted for poor clay lands is at present but imperfectly understood, and consequently little progress has been made in the improvement of this class of soils.

As the system I shall propose for the consideration of the meeting for the rotation of crops on inferior clay lands, will not be equally applicable to strong lands of a rather better quality, with a more mixed soil, I will confine my observations in the first instance to the former class.

Before I proceed to explain the course I recommend to be pursued in cropping inferior clay lands, I must assume that the plan of furrow draining I so strongly urged at a former meeting is to be acted upon; after that is accomplished, I am fully persuaded that subsoil ploughing would be attended with great advantage, especially if the subsoil plough is used across the ridges, as in that case it facilitates the escape of the water into the furrow drains. After this system of furrow draining and subsoil ploughing has been some years in operation, thereby altering the texture of the subsoil, I have little doubt that a portion of land upon each farm may be cultivated without the expense and loss attendant upon a summer fallow; but, until that change has been effected, I do not think that summer fallows can be dispensed with, for it is too much to expect that spring working will be sufficient to reduce and pulverize soils of that description, if not previously underdrained and improved.

I have long endeavoured to impress upon the cultivators of such lands the evil consequences of taking two white crops of grain in succession, and sowing seed upon the second corn crop; the land being then much exhausted, and very generally in a foul state. Under such a pernicious sytem no improvement can take place, and in the next course of tillage the same expense and labour is necessary as in the preceding one, without any increase of produce; thereby making the tenant's life one of endless toil and labour, without enabling him to make any provision for his family.

The course of cropping which I recommend for this class of clay land is as follows:—

First year.........Fallow.
Second year......Wheat.
Third year........Seeds.
Fourth year ......Second seeds (or a third year in turf, if practicable).
Fifth year ....Oats or Beans.

I am of opinion that beans with some peas would be more desirable than oats on breaking up the turf in the fifth or sixth year, and that stock would do better in the winter if fed with bean and pea straw than oat straw.

I now come to the consideration of the best course of cropping for the second class of strong clay lands, comprising lands of a better quality and more mixed soil than those I have been treating of.

In the cultivation of this description of land, summer fallows have been on the decline in some districts for many years past, from the conviction that they do not tend to bring new riches to the soil, and that their only use is in the destruction of weeds when land is in a foul state. I fully agree in the opinion of a practical writer who says, "that land does not require rest by lying fallow, and that there is always a greater certainty of an abundant produce after a smothering shady green crop, where it can be obtained, than after a summer fallow."

The advantages resulting from growing turnips upon the more mixed soils, on a strong land farm, instead of summer fallowing the whole, are not to be conceived by those who still adhere to the old system, under which little or no profit, in these times, can arise. By growing a portion of turnips (which in quality are superior to those grown upon light lands), the farmer is enabled very considerably to increase the quantity of his stock; thereby largely increasing his quantity of manure, and promoting the fertility and productiveness of his farm. I have been assured by a practical farmer, upon whose statement I can entirely rely, that he has grown as much as 30 tons of turnips per acre upon some of his strong land; and that since he has pursued that system his produce has been materially increased, and his farm rendered more profitable.

Under the system I am recommending, the course of cropping would be as follows:—

First year......Part turnip fallow, part summer fallow.
Second year.....Part barley, part wheat.
Third year .....Clover seeds.
Fourth year.....Second seeds (or a third year in turf if practicable).
Fifth year.......Oats, or beans and peas, on breaking up the second or third year's turf.

Sowing vetches or rye on stubble, for spring eating, ought not to be neglected when it is practicable, and the land has been laid dry and improved.

In offering these suggestions, I do so with a firm conviction of the advantages that will accrue to the farmer in adopting them; being fully persuaded that the old system of summer fallowing, and then taking two white crops of grain in succession, is a bar to all improvement, and that little or no profit can arise to the cultivator; who will find when too late, that by adhering to so ruinous a system of cropping, the employment of his capital has been useless, and the labour of his life thrown away.

MR. JOSHUA DICKEN, ON THE BEST METHOD OF PLOUGHING STRONG LAND.

MAY, 1841.

GENTLEMEN,—There is no kind of agricultural labour with which farmers are more familiar than with that of ploughing, and on this account there may be some who think it a subject unworthy of discussion at a meeting like the present. But it is not so—whatever is of importance in itself, is not unworthy of our attentive consideration.

"Familiarity breeds contempt," and it still more frequently induces us to pursue the old beaten track, without considering whether we may not long have been acting erroneously, or whether improvements may not be introduced. In this respect we might do well to follow the example of our friends the manufacturers; they are ever on the alert to take advantage of every improvement that may from time to time be introduced in machinery, and I beleive it is to their freedom from prejudice, to their general intelligence added to persevering industry, that the extraordinary degree of completeness to which manufactures have arrived in this country, may be attributed.

Gentlemen, any man can understand facts, but it is well also to inquire into the reason of those facts, and I would ask, what is the reason of the agriculture of this country remaining up to the present time so far in the back ground of other pursuits?

Clearly this: farmers have hitherto been satisfied to work with their hands only—

> "To plough and sow, to reap and mow,
> My father taught me early, oh!"

has been their favourite song; and so long as they continued in this honest, industrious course, and taught their children the same, they imagined that they were doing all that could be done, and that if success did not attend their efforts, the fault was not with them. Here I believe it is that our mistake has been, and by understanding and rectifying this mistake it is that we owe the present revival, and the rapidly increasing improvement in the practice of agriculture.

A great deal of bodily labour is requisite, but I believe that mental activity is still more requisite in those who have the direction of farming pursuits. This assertion would scarcely have been admitted a few years ago. I remember this very wise instruction being offered to myself when a boy, by one who occupied some hundred acres of land—that farming was more easily learnt and more easily practised than any other business. I believe the very reverse of this to be the truth, and that it affords abundant scope for the exercise of the highest talents, and the most extensive information; and so it was regarded in very remote ages, for Sinclair in the title page of his book on agriculture, quotes this sentence from

Cicero: "Of all things by which anything is acquired, nothing is better than agriculture, nothing more profitable, nothing more delightful, nothing more worthy of a freeman."

But you will think me long in arriving at the business of to-day. The subject of ploughing has been of late very much discussed, and important improvements have been the result. On the present occasion we are to confine our attention to the best means of ploughing strong land. In most of the trials of which I have heard, this distinction has not been made sufficiently prominent; the chief battle has been between ploughing abreast and in length, without sufficiently considering the different qualities of land. On light soils I think it does not admit of question, that the gee-ho system is by far the best; but on really strong land the ploughing abreast system does not appear to me admissible, even if it were possible to obtain two horses powerful enough for the work; the treading of the horse out of the furrow does so great an injury.

This is my own opinion, but I shall be glad to hear what others may have to say upon the subject.

Again, there are other kinds of land, that do not exactly come under the denomination of strong land, and which may possibly be ploughed with two horses abreast, but which are so much inclined to run to clod, that I do not consider them well calculated for this system of ploughing; some of the best land I myself occupy is of this description.

Mr. V. in his observations on growing turnips on strong land, said—Don't make the land too fine. I am aware of the justness of his remark, that in a highly pulverized state, it is liable to set after rain; but yet I would say on the other hand, don't make the land too cloddy, for in the cultivation of turnips that is one of the greatest difficulties we have to contend with.

In discussing the present subject, I do not see that we can do more than forward general principles, the details varying so exceedingly from the vast difference of soils, of seasons, and other circumstances. But the benefits arising from good tillage are so great, that we cannot pay too much attention to the subject.

By good tillage, I mean ploughing at the proper time, and proper depth, laying the ridges in the best form, and the most desirable width, according to the nature of the land, and the crop for which it is intended. In ploughing strong land I believe the most important general rule to be observed is, never to plough it in a wet state; the bad effects of doing so are too obvious to need description—and I think the next important point to be observed is, to avoid as much as possible, all spring ploughing for corn crops.

All stubble lands, without distinction, ought to be ploughed in autumn; by doing so the growth of root weeds is materially checked, the seeds of weeds will vegetate, and by the action of frost the soil will be brought into that friable state, most desirable for putting in the succeeding crop with the scuffler and drill—a most important improvement in modern farming.

It is said by some, that strong land ploughed before winter becomes too solid for the reception of the spring seed without another ploughing, but this appears to me a mistaken view. If it be allowed to remain till quite dry, I think there is no land so stubborn but what may be effectually broken up by a scuffler strong enough, and adapted to the purpose, and it is clear that this method saves an immense deal of labour at a time when every day is of the utmost importance.

By ploughing the land again in spring, these advantages are lost; a deep and beautiful mould is exchanged for stiff clods, together with the stubble and rubbish of the preceding crop; the drill is put entirely out of the question, together with the advantages of hoeing; the crop will be later, and that unsightly mass of clods and weeds will be produced, with which we are not altogether unacquainted.

In regulating the depth of ploughing, we must be guided by the quality and depth of the soil; but in autumn I think it is desirable to plough even the worst of land a considerable depth, say 8 or 10 inches, because by bringing up and exposing a portion of the bad subsoil to the influence of the winter's frost, it becomes pulverized and improved; and thus the depth of working soil will be increased, and by mixing with manures it will, I think, soon become as good as the original 5 or 6 inches.

It is also a fact that deep soils are more independent of seasons: in times of excessive rain there is greater depth of soil to absorb the moisture, and in a dry season it is still more useful, for in the lower part of the cultivated soil there is thus a reservoir of moisture which is brought up to the roots of the plants by evaporation; it is also the only effectual means of destroying root weeds.

With respect to the management of fallows, I would recommend a ploughing to the full depth as early in the winter as possible; i. e., after all the lands intended for spring crops have been ploughed, taking care that the land be laid perfectly round, so that the water may pass off freely; then, as soon as spring work will admit, reverse the ridges. I think this preferable to cross ploughing the first time, for by doing so the cops of the first ploughed butts are split open, and the land is not exposed to the ill effects of wet, should there be a considerable fall of rain before the time of cross-working. The next, i.e., the third ploughing, should be across, but no deeper than may be necessary for the destruction of weeds, and this may generally be effected with the double plough. I think all the requisite ox harrowings, &c., should be applied to this earth. The fourth ploughing should be to the full depth with single ploughs; after this, I think the land ought to lie undisturbed a considerable time, which will encourage the vegetation of seeds, and bring it into the best possible order for ploughing into butts; I think that double ploughs are best adapted for this purpose.

Dung ought to be applied before the last cross-ploughing; but if lime be used, it is better to lay it on when the land is dry, after the last cross-ploughing, because it is the nature of calcareous manures to sink, and therefore they ought not to be ploughed in too deep.

In drawing up furrows width must be considered, for that is the only time to determine this point; and if it be intended to drill in the seed during any part of the course, the width of the land ought to be exactly that of the drill to be employed, in order that by passing up the furrow, the sides of two butts may be sown at once, and thus there will be no necessity for the horses setting foot upon the land.

At our last meeting, Mr. Y. condemned cross-ploughing; in this opinion I differ with him, but not liking to rest on my own opinion, I have sought for authority; and here it is, from Sinclair.

"Though ploughing in general must be lengthwise, yet crossing the ridge is occasionally advantageous, sometimes to secure the complete stirring of the soil, sometimes to promote the ultimate intermixture of manure after a crop of drilled turnips, and always when the ground is summer fallowed."

The celebrated Tull recommended not to plough across the land till the third furrow was given, and this recommendation is generally followed by farmers on clay soils.

Trench ploughing is also spoken of, which is a "plan of ploughing double furrows, either by a plough with a skim coulter, or by means of one plough following another, and is an excellent mode of breaking up grass-land." The first plough pares off the surface 1 or 2 inches thick, and turns it into the bottom of the last made furrow, while the second plough going 3 or 4 inches deeper, turns upon it a sod of friable earth.

The last mode of ploughing I shall mention is one of late invention, i. e., subsoil ploughing. The principle of this is to stir the subsoil to a considerable depth below the worked surface, without bringing it to the top. This invention, like all new inventions, has many advocates among scientific men, and great benefits are said to have been derived from the practice; I have not myself seen them. I have been only acquainted with one trial, and I must say that that was a complete failure; but I hope to hear more of it to-day. The principle is good, but until it can be executed by steam power, I think that no benefit can be derived from it on strong land; the treading of so many horses on the newly-stirred soil appears to me to do more injury than the operation can do good; moreover, it is a very expensive business.

ON BREEDING.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—In your "Mark Lane Express" for July 25 last, you quote a letter from "A Friend to Improvement" to the editor of the Ayr Advertiser to this effect. "Having had some experience in breeding, and having used for that purpose bulls of all ages even up to 13 years, I have invariably found that the stock produced by those arrived at maturity are infinitely superior both in size and constitution to those got by younger animals. If the improvement of the breed is sought, then the qualities of an animal's produce ought to form the criterion of judgment; these cannot however be known until his stock have been matured, consequently his greatest recommendation by the above mentioned rule must be lost sight of altogether. Encouragement ought only to be given to those animals (I mean bulls and stallions) that have produced the best stock; and one principal reason for my insisting on this is, that I have seen very frequently that bulls and draught stallions that have obtained prizes threw the very worst description of stock, whereas those who had excellent produce were sent along with it to the butcher ere their properties were well known."

And you report in your No. for August 8, that Earl Spencer at the council dinner of the Yorkshire Agricultural Society, stated that he had been a breeder of cattle to a large extent, and before that he had been a breeder of fox-hounds; and therefore he could look back to 34 years of experience in breeding animals. They were told never to breed from anything but a perfect animal. Agreed, if they had a perfect animal on both sides; but when they had an animal not perfect on one side, what were they to do to correct that imperfection? He had been told this when he was a very young man and began keeping hounds, and the consequence was he used to breed from nothing but a perfect animal. He bred from animals belonging to other people which he did not know anything about, but could not find any of his own that were perfect. He found that this plan was not likely to answer, and then he adopted another system. If the animal had any distinguishing demerit, it was desirable to put to that animal one having directly the contrary merit in a very high degree. The consequence was, he had some of the best hounds bred on both sides, producing a good result. He applied the same principle to cattle, and found it quite successful, although this was not generally admitted as a good principle. While they talked of perfect animals they did not often see any. If they saw any they were sanguine, and happy to think that they were possessed of perfect animals; but when they witnessed the stock of other people, they found very few perfect animals among them. He would say that a man who has perfect animals the more likely he is to breed well. Would it be refused to put an animal which had a fault to breed from a cow, or would they reject a bull because he was rather objectionable? He then alluded to breeding in and in, and he said as far as his experience went he saw no objection to this, although objections might exist. "When the constitution of the animals was good, and proper attention had been paid to selection and to family, as well as to the individual itself, he had seen no disadvantage to breeding in and in."

When such talented authorities as the above think fit to favour us with the result of their experiments and court discussion from practical persons, it is their bounden duties to respond thereto, and I hope some person of more extensive business would have before taken notice of the above communications; but as the subject is of such importance I am unwilling it should lay dormant, and I trust it will be followed by other persons of greater practice.

With regard to the subject of the first letter, I perfectly agree that the generality of breeders too quickly get rid of their male animals, not only on account of their not proving the merits or demerits of their produce, but it is wrong to exchange for males of precose propensities, and to expect from them extensive propagation: high keep and feeding may produce desires, but it is not to be supposed but that the offspring may be defective, and I entertain the opinion that such offspring are more particularly constitutionally diseased.

The breeder is much more justified in using a matured or old male if he is in full vigour; management in fair keep, rest, and not being over used, have much influence on the powers of procreation.

And with regard to the offspring of matured males, we find that several of our most fortunate breeders have acknowledged to have committed the error of too soon parting with their matured male animals; for instance, Mr. C. Collins, of shorthorn celebrity, parted with his bulls Hubback and Foljambe before he was fully aware of the merits of their offspring. And we are told that Mr. Robert Colling's bull North Star produced as good calves at sixteen years old as at any period of his life. He was a strong charactered beast, and his offspring from generation to generation carry it with them.

In reply to Earl Spencer, I must beg to say, I am perhaps fastidious. I do not recollect to have seen a perfect animal—hounds or dogs I am little acquainted with—but with respect to neat cattle the only recommendations I can give as to points are:—

breed from the best you can procure; keep in mind to obtain those points in the greatest proportion where lay constitution, and parts commanding the highest prices. I must also beg to observe that his Lordship has touched upon a subject which I do not feel myself competent fully to discuss—I mean breeding in and in. What is breeding in and in? Father and daughter, mother and son, is not breeding in and in, but brother and sister may be so termed; to breed from that, brother and sister (the produce of male and female possessing but little consanguinity) perhaps may be judicious in a few instances, but even then I think it justifiable to be accompanied by some assistance, such as removal to a locality more invigorating and so forth.

As I have before stated, vigour in the male I consider to be of the most essential consequence. Take for instance a herd of deer, or in a forest set apart for breeding cattle and horses (where perhaps some reasoners may say incest is constantly practising.)—there we find produce is kept up by reference to vigorous male constitution.

And although Mr. Bates, of Kirkleavington, considers his short-horns possess a long series of the same blood, yet if we look to his pedigrees (even of the Duchesses) we find some alien introduction; and so also with breeders of other varieties of celebrated cattle, and without doubt with beneficial effect.

I trust you will excuse my prolixity, and that the subject will become a matter of greater consideration and further discussion.

I beg to subscribe myself, yours obediently,

Somerset.

EDUCATION OF FARMERS' SONS.

The following very sensible observations on the subject of education, as referable to the children of farmers intended for agricultural pursuits, are well worth a careful perusal. And as the season is fast approaching when the different agricultural societies will hold their annual meetings, we think the subject in the meantime will well deserve the serious consideration of those gentlemen who take a more prominent part in the proceedings of such meetings:—

Among the many steps now taking to improve the education of the yeomanry, one of the most efficient will doubtless be the establishment of schools in which lads can be taught in a formal manner the principles on which the business they will afterwards have to follow are dependent. We have now before us two prospectuses of such institutions, one near Romford, and the other in the neighbourhood of Gloucester; the latter is, we understand, under the direction of Mr. Morison, whose plan for asylum farms, instead of workhouses, we noticed some time ago.

We cannot pretend to form an opinion of the success with which such plans will be carried out, so much depending upon the tact, as well as theoretical and practical knowledge of the directors; but this we can say, with confidence, that they must be a great improvement upon the manner of educating the sons of farmers. In such schools as we remember, the object of the master seemed to be to keep a lad in the greatest possible ignorance for the longest possible time; and when he was sent to learn to farm, he was provided with no kind of elementary knowledge that could bear upon that important subject, to which all his energy and talent and capital were to be devoted during the remainder of his life. A mind untrained to habits of reflection is in the worst possible state to enter upon the great field of accurate observation; and this is one great reason why farming has made such slow progress, and has become so much a mere routine.

What idea is a young man to form of the diseases of cattle, who does not know even the meaning of the term animal physiology? How is he to understand the circumstances that affect his crops, if he is ignorant of the general laws that control the growth of plants? By what method is he to judge of the probable value of manures in an entire ignorance of chemistry? And whence can any improvement in the instruments of husbandry be derived, when the first principles of mechanics are unintelligible?

What, it will be exclaimed, must a farmer be a physician, a botanist, a chemist, and an engineer? Certainly not; it cannot be of any real service to him, as a farmer, to be any of these things, his business is to be a farmer. But it is highly desirable that he should understand the general facts connected with these subjects, so as to understand what he is about. It is the plainest duty of parents to provide their children with such information when it can be procured, and we believe the age is enlightened enough to agree with us.

We have no visionary plans. We have no fancy for Utopian schemes. No one will ever hear us advocating a system of over-education, which does infinite mischief, putting men out of that station in life in which it has pleased God to place them. We entirely disclaim all such sentiments; but it does not therefore follow that we approve of under education; in truth, one is as bad as the other. If a farmer can neither read nor write, he will certainly be cheated; if he does not learn to ride, he is very likely to break his neck; if he knows nothing of the practical business of his farm, he is pretty sure to be imposed upon by every one around him; therefore he is taught such things. But we also submit that if he is ignorant of the causes which influence his success or failure as a cultivator of the soil, and is compelled to trust exclusively to such usages and practice as he may be taught, if he is driven to work altogether "by rule of thumb," he contends with the elements, and directs his course of husbandry at just as much disadvantage as he would contend with other things if he could neither read, write, cypher, ride, sow, plough, nor reap.

What folly it is to bore country boys with Latin, Greek, and French, to annoy them with algebra, and waste their growing energies on mathematical puzzles, at the certain sacrifice of all that time which could be so usefully employed in bringing them acquainted with the material objects that surround them. Depend upon it, there is more practical wisdom to be gained from a block of wood, a horse's hoof, or even a dunghill, than from all the so-called learning of the schools.

Let country boys remain at their ordinary schools till they are 14, transfer them to an agricultural school for a couple of years, and then, when they are 16, it is early enough to put them to learn to be farmers. Accustomed to correct observation, acquainted with the general nature of the things they have to manage, they will enter upon their first occupation with all the chances in their favour of using wisely the opportunities they may have of applying their knowledge to practice.

While we thus unreservedly express our opinion as to the great national importance of agricultural schools, and our pleasure at seeing them already beginning to arise, we must however add, that it is only by a very judicious system of teaching that they can be made to answer the purpose. It will not do to cram boys. Let them be taught a little, and that well, and let everything be presented to them in an attractive way. Botany and chemistry are not to be learned at the age of 14 by the same ingenious processes as are employed to infuse the matter of a Latin grammar into the head of a poor child at seven. By 14 the servility of the human mind is gone, and the natural independence of man begins to be felt.—*Gardeners' Chronicle.*

ON AGRICULTURAL CHEMISTRY.

(FROM THE LANCASTER GUARDIAN.)

[*Concluded.*]

242. Bran from wheat contains the phosphates in considerable quantity, and has recently been used with success in the rearing of calves, mixed with farinaceous substances which do not contain phosphoric acid. The admirable properties of milk as an article of food for young animals are familiar to all; we may therefore easily imagine that dairy farmers would have great difficulty in providing a substitute for it; bran, however, is reported to be a great improvement to the other matters usually resorted to—so necessary is it in feeding animals or plants to provide a due supply of many substances that seem of little value. "Children fed upon arrowroot and similar substances containing no principles suitable for affording bone and muscle, grow fat and plump without acquiring strength."—*Liebig.* "The small quantity of the phosphates which the seeds of lentils, beans, and peas contain, must be the cause of their small value as articles of nourishment, since they surpass all other vegetable food in the quantity of nitrogen (azote) which enters into their composition. But as the component parts of the bones (phosphate of lime and magnesia) are absent, they satisfy the appetite without increasing the strength."—*Liebig—Note to Playfair's Translation*, p. 157.

243. Bran, on account of its phosphate, has been used as a manure; the phosphates being mixed with carbonaceous matter will soon be rendered soluble. A mixture of rape-dust and bran might perhaps answer better than either of these substances separately. But it is obvious that the most economical use of bran must be to give it as food to domestic animals, along with potatoes and such substances as are deficient in the earthy phosphates.

244. Gypsum—*Alabaster, Selenite, Plaster of Paris; sulphate of lime*, consists of lime and sulphuric acid, or oil of vitriol. It exists abundantly in some districts, and appears to be a good ingredient of soils, being found in the ashes of many plants. Its effects, however, are not well understood; they seem to be more generally acknowledged as beneficial in America than in Europe. One reason for this may be that its agency is not direct, but rather dependant on the presence of organic matter, which is more abundant in a new than an old country. Besides this, man and the domestic are the means of diffusing gypsum as well as bone earth, though in small quantities, through every cultivated soil.

245. Gypsum has been recommended for the purpose of *fixing* ammonia—of forming with that volatile alkali a salt that is volatile no longer. "The ammonia emitted from stables is always combined with carbonic acid; as carbonate of ammonia and sulphate of lime cannot be brought in contact at the ordinary temperature without undergoing decomposition, we have only to scatter gypsum in powder from time to time in places we wish to disinfect. By this means we at once remove the offensive smell, and fix the ammonia so that it can be preserved for the purposes of agriculture."—*Liebig*, s. 132. Gypsum, as already stated (244), is very abundant in some parts of these islands. "Quarries of alabaster, or granular gypsum, are worked at Chellarton and several other places of Derbyshire; at Droitwich two beds have been sunk through, forty to seventy-five feet thick."—*Trimmer's Mineralogy and Geology*, 279. It is so generally used in the arts, that gypsum may be procured without difficulty at a price sufficiently low to place it at the disposal of any agriculturist who may appreciate the necessity of economising azotised manures—the great desiderata of good farming. Where gypsum is naturally scarce it can be most profitably applied—perhaps only applied—as a disinfectant of animal manures, or mixed with gas liquor in a way to be described hereafter. But when thus used it acts, not as gypsum, but merely as sulphate of ammonia and carbonate of lime. There is great want of correctness in the reasoning of agricultural writers on the subject of gypsum. They take great pains to show that gypsum is essential to the vegetation of certain plants; they adduce many proofs of the advantage resulting from its use; they tell us of Dutch ashes and other ashes of great virtue, which they consider only valuable from the gypsum they contain; yet they go on to teach us how to decompose this very gypsum, so valuable in itself, and convert it into something better. They perplex the reader by not explaining that *gypsum itself* is the *sulphate of lime*, but that *gypsum improved* is a different thing—the *sulphate of ammonia*.

246. In the preparation of coal gas the black smoke is deprived of its tar, its sulphur, and other impurities by ingenious contrivances suggested by chemical science. In one part of the process quicklime is employed for the purpose of absorbing sulphur from the gas; this quicklime is converted by the sulphur into sulphuret of lime, though the change is never complete, as fresh lime is employed frequently, in order that all the sulphur possible may be detained. The resulting compound is a mixture of lime, sulphur, and water, which, if applied fresh to the soil, would produce the usual effect of lime, and in addition would poison most kinds of insects in virtue of its sulphur. But in no long time the sulphur would become sulphuric acid by absorbing oxygen gas from the air, and would pass into the state of sulphate or gypsum. Therefore this lime, after the gasman has done with it, is better than it was before for all agricultural purposes wherein gypsum is better than lime.

247. Some general remarks are equally applicable to gypsum as to lime. It is doubtful whether either substance acts by promoting or retarding the decomposition of organic (*i. e.*, animal and vegetable) matters. The uncertainty of our knowledge on this point has given rise to questionable theory and uncertain practice. We neglect the distinction between *chemical* and *physiological* composition and decomposition; we cannot judge of the solubility of any substance in the organs of a plant by our observation of what may pass on the flask of a chemist. For the process of vegetation is in many respects the very reverse of chemical combination (5, 98); and it is evident that the most valuable constituents of the best soils are those which detain organic matters beyond the reach of mere chemical agents until they can be dissolved and digested by the vital power of the roots and leaves of plants.

248. Gypsum is formed, as was pointed out by Sir H. Davy in his 7th lecture, whenever sulphate of iron (green vitriol or green copperas) comes in contact with lime, whether caustic or carbonated. Springs containing iron are supposed to be injurious to vegetation; but it is found that such springs, when they pervade a soil containing calcareous matter, conduce to fertility. In many districts we

find beds or layers, or strata of what is called shale, a black looking slaty mineral that falls into powder when exposed to the air. It consists principally of iron, sulphur, and alumina. Wherever the two former are not in sufficient quantity to be worked for the sake of the sulphate of iron, they may be abundant enough to repay the cost and trouble of admixture with lime. One cart load of lime would be amply sufficient for ten times the quantity of shale. The resulting compost, well mixed together, might be added to farm-yard manure at any time of autumn or winter when it was desirable to disinfect the latter, and preserve it for use in the spring.

249. The Nitrates. *The nitrates of potass, saltpetre,* or *nitre,* and the *nitrate of soda* or *cubic nitre,* are yet too costly for profitable application in large quantity. The same probably holds true of Guano, whether imported or factitious. Where-ever carbonaceous matter is very abundant, these substances, which contain azote in considerable quantity, will no doubt contribute powerfully to bring the carbon into profitable operation; but they do not promise permanent fertility, and the prudent farmer may find a better investment for his spare capital in those modes of improvement which have been discussed already, and of which the value can always be duly appreciated, whatever may be the fate of the theories propounded by philosophers to explain them.

250. Soapers' Waste possesses little or no more value than carbonate of lime with a proportion of the hydrate, and large excess of water. Its price being very moderate, this refuse substance may perhaps be employed occasionally as a cheap substitute for chalk and lime, to disinfect animal matters, or to mix with peat earth, tanners' bark, decayed leaves, or other carbonaceous substances.

251. Along the sea coast shell-fish are collected at certain seasons of the year, and allowed to putrefy in large heaps, to the great annoyance of the public, and to the loss of the farmer who so misapplies them. A certain degree of incipient decomposition appears to be necessary for producing the full effect of this application to the soil, and it is said that the ultimate consequence is its deterioration, not improvement. It would be much better to cover up these disgusting accumulations with peat, earth, and lime, and to mix them into composts with vegetable matter, so as to retard their decay until they can be incorporated with the soil. "The death and decay of animal substances tend to resolve organised forms into chemical constituents; and the pernicious effluvia disengaged in the process seem to point out the propriety of burying them in the soil, when they are fitted to become the food of vegetables. The fermentation and putrefaction of organised substances in the free atmosphere are noxious processes; beneath the surface of the ground they are salutary operations. In this case the food of plants is prepared when it can be used; and that which would offend the senses and injure the health, if exposed, is converted by gradual processes into forms of beauty and of usefulness; the fœtid gas is rendered a constituent of the aroma of the flower, and what might be poison becomes nourishment to animals and to man." *Davy,* Lecture VI.

252. In the destillation of coal for the manufacture of gas a quantity of ammoniacal liquor is procured. Of this gas-liquor the chemical constituents are such as to give it a strong claim on the attention of the agriculturist, and the results of the trials that have been made seem to realise the expectations formed on theoretical principles.

253. A ton of coal yields, in the process of gas manufacture, above twelve gallons of ammoniacal liquor. Dr. Daubeny states, on the authority of Mr. Richard Philips, that each gallon of the gas liquor contains as much ammonia as mixed with sulphuric acid affords a pound of the sulphate of ammonia. But to form the sulphate of ammonia from gas liquor it is found that gypsum or sulphate of lime answers the purpose perfectly; and it has been recommended to the managers of gas works, that they should establish manufactures of sulphate of ammonia for sale. It is evident, however, that if advantage accrue to the agriculturist from converting the ammonia into a sulphate, he may accomplish this object more economically by adding gypsum to the gas liquor, without the additional processes of evaporating, crystalizing, &c. which require trouble and fuel. The sulphate of ammonia is, however, manufactured for sale at Glasgow, and sold there for less than 20s. per cwt., being very little more than 2d. per lb. It is ascertained that 75 parts of sulphate of ammonia contain as much azote as 86 parts of nitrate of soda, and nitrate of potash contains less azote than the nitrate of soda. The price of the nitrates being higher than that of the sulphate of ammonia, the latter must prove by far the cheapest source of nitrogen or azote for the purposes of agriculture. This comparison is made on the supposition that the salts are equally pure. Absolute or chemical purity cannot be reasonably expected in articles sold by the hundred weight or ton, but some standard of commercial purity ought to be established; and if not enforced by law, its violation should be visited with more discredit than is usually attached to commercial sophistications in this trading country. If it be truly stated by chemical authors that sulphate of ammonia is entirely decomposed and volatilised at a red heat, there can be little difficulty in ascertaining whether it have been sophisticated by any fixed or non-volatile addition. We lately heated forty parts of commercial sulphate of ammonia to bright redness in a platinum crucible, and were a little surprised to find about twelve parts of residuum, when we expected only one or two. Whether the sulphate was adulterated, or the experiment inconclusive, we cannot now stop to enquire.

254. It requires about a pound and quarter of dry gypsum to convert a gallon of gas liquor into sulphate of ammonia, the gypsum being at the same time charged into carbonate of lime.—*Daubeny.* But whenever the gas liquor can be applied directly to a soil abounding in carbonaceous matter, and at a time when vegetation is active, the most profitable use of this material would seem to be to dilute it with water, and sprinkle it over the growing crops, meadows, or pastures. It contains some sulphur in a gaseous state, like the gas-lime already mentioned, and, like that, must be destructive to all kinds of insects. This gaseous sulphur, or sulphuretted hydrogen, is thought prejudicial to animal life, and is certainly excessively disagreeable to the smell; when it is sprinkled on the fields, cattle should be fenced off for a few days. Gas liquor poured upon carbonaceous substances has a powerful effect in softening and dissolving them. Hence it would seem to be a good addition to peat earth, tanners' spent bark, decayed leaves, &c. &c. In some experiments

tried with gas liquor upon meadow land, it was found more profitable at the price of fourpence per gallon than nitrate of soda, nitrate of potash, rape dust, bone dust, &c.—*Quarterly Journal of Agriculture*, March, 1842. The ammoniacal liquor was observed to promote the growth of Timothy grass in a remarkable manner.

255. Some agricultural and geological chemists are of opinion that in process of time the supply of azote will fall short of the demands of vegetable life, unless there be found, in the economy of nature, some extraordinary compensation of this element. Such compensation they discover in the operation of volcanoes. It seems quite as probable, however, that azote is obtained directly from the atmosphere, to a certain extent, by many inorganic substances existing in soils, and by the leaves of many plants, though in the present state of science this cannot be proved in a conclusive manner. It is by preventing or supplying the constant loss of azote that good systems of husbandry are especially distinguished, and the means of effecting this object will improve with the advance of chemical and mechanical science. When we find that every ton of coal restores to the atmosphere and the soil as much azote in a soluble state as is sufficient to constitute twelve pounds of sulphate of ammonia, we cannot but regret that from so constant a source of this shy and fugacious element the agriculturist has derived only a scanty benefit, in the unattractive shape of soot or gas liquor. It may be hoped that, as the useful arts advance, the combustion of coal will, by improved processes, be rendered more compatible with health and comfort, and at the same time more subservient to the use of the farmer.

Many other subjects might still invite and reward our attention. One of these, which we regret to postpone, and would reluctantly abandon, is peat earth, or peat moss; a soil of paramount importance to the agriculture of the United Kingdom, and of this district in particular—a subject to which we have frequently adverted—a source not merely of fuel but of manure, to use the true and emphatic language of Davy already quoted. But it is time to close a series of papers, commenced six months ago, and already protracted far beyond the ordinary and reasonable limits of newspaper contributions.

No notice needs to be taken of the excretions supposed by Macaire Decandolle, and others, to be given off by the roots of plants. The best authorities are decidedly opposed to this notion, and it is confessedly of no importance in a practical point of view; the necessity of tillage and of rotations of crops rest upon other and more solid arguments.

In addressing the readers of a local newspaper we neither expected nor desired to obtain a general circulation for remarks so unfinished and unconnected as these are felt to be. We have attempted to reconcile the theory with the practice of agriculture, without presuming to enhance the importance of the one at the expence of the other. Not unconcious of the yet imperfect state of chemical science, particularly in its application to the organic kingdom of nature, we have indulged in no unseemly reflections upon the presumed ignorance of the small farmer. To him the four rules of common arithmetic will supply knowledge more precious than speculations on the four ancient elements. It were mockery to propose the study of science to one whose thoughts are engrossed with the cares of the day, regret for the times past, and gloomy anticipations of the future.

"Jamque, caput quassans, grandis subspirat arator
Crebrius in cassum magnum cecidisse labores.
Et quom tempora temporibus præsentia confert
Præteritis, laudat fortunas sæpe parentis."—*Lucret.*

To the country gentlemen chemistry prefers many claims which it is unnecessary to enumerate. As an exercise of the mental powers, appealing to weight and measure at every step in the progress of demonstration, it has always been an attractive pursuit to the lovers of truth for her own sake; and, if we credit Dumas, has contributed to brace the moral, no less than the intellectual character of its votaries. Those who frequent courts of law are daily witnesses of the zeal and pertinacity with which the rights and boundaries of any barren waste or common are investigated and contested. Heat and light, the air, the dews and rains of heaven, are the boundless common rights of all mankind. Endowed by their bountiful and all-wise Creator with properties so various and beautiful as to arrest the attention of the most ignorant, and occupy the faculties of the most enlightened, these lavish gifts of Providence demand especial admiration and gratitude from the possessors of the soil. "An unwise man doth not consider this; and a fool doth not understand it."

APRIL WHEAT.—RESULT OF AN EXPERIMENT.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—I was induced, by seeing the "April Wheat" advertised in your paper, to send for a small sample. The following is the result of my experiment with it:—

I selected two perches of precisely similar ground, and adjoining each other. The soil was for six inches a made soil, from an old bank, brought to cover a stiff, loamy, brick earth. It had grown a very good crop of mangel the previous autumn.

Perch No. 1, I manured with the half of the following compost:—

1 gallon of ammoniacal gas-water.
½ bushel of saw-dust.
Coal ashes and gypsum, sufficient to fix the ammonia.
½ pint of gas-tar.
1 pound of nitrate of soda.
4 barrow loads of poor rubbishy turf and weeds.

In about three weeks the gas-water had decomposed this mass: half of it was dug in on No. 1, a few days before planting the wheat. On No. 2 no manure of any kind was put. The wheat was dibbled in rows six inches apart, and the same distance in the rows, one or two grains at a place. Both perches came up quickly, and grew well; No. 1 looking a deeper green and stronger plant. In a few days I perceived that No. 2 was very much eaten by the wire-worm till nearly half was destroyed, whilst No. 1 was scarcely touched; and I think, if I had applied all the compost, not a grain would have been eaten. The wheat continued to grow rapidly, No. 1 keeping the lead in appearance, and promised a heavy crop. It came into ear on the 23rd of June, No. 1 one day earliest; both were harvested on the 15th of August, and thrashed out soon after. No 1 yielded one gallon two quarts, No. 2 three quarts one pint.

The sample is hard and dry, but it is a coarse, long cleviled lean wheat, and is very loose jointed in the ear; it is bearded. I certainly am disappointed with this wheat, as its appearance previous to coming into ear, combined with its very rapid growth, led me to expect better things; but, if I am disappointed as to the wheat, I am agreeably surprised at the result of the compost, which appears, from this experiment, to destroy the wire-worm at a very trifling expense, for the *whole* of my mixture did not cost 4d.; and I am sure, if made in large quantities, it would be much cheaper. From all I have heard of "Daniel's Manure," I imagine it to be very similar to mine; and I hope the result of this experiment will induce my brother farmers to try it (Daniel's) with barley, which is so liable to be attacked by the wire-worm.

I do not perceive any difference in the samples of the two perches, and there was very little in the size of the ears; but I think, if No. 2 had not been eaten, No. 1 would have yielded the best. This wheat, I have lately heard, is not new to this part of the country, as it was grown by a farmer in this neighbourhood some years since. His first crop was a good one, but subsequent ones so inferior, that he gave it up, particularly as the millers refused it. The weight is also bad, my samples not weighing more than 44lbs. to the bushel.

Two gentlemen in this neighbourhood, at my request, have also tried it, with very similar results.

I remain, sir, yours, much obliged,

John Maxwell Tylden.

Lymminge, Canterbury, August 29.

MAIDSTONE FARMERS' CLUB.

At a monthly meeting of this club, held some time since (C. G. Whittaker, Esq., in the chair), the subject of discussion was the best sorts of stock, and the best modes of breeding, feeding, and fatting.

Mr. Viney, on being appealed to by the Chairman, said that in keeping cows he had generally found the Welch quite as good, if the object were the fattening of calves, as the Sussex. He had very seldom reared any stock, but generally fatted his calves and sold them. He had tried both Welch and Sussex, and sometimes Irish. He had once given 5*l.* for an Irish cow, and had always, during the seventeen years which he had kept her, made more of each of her calves than he had given for the cow. He thought, if the object was the breeding for fattening bullocks, the best breed was a mixture of the Sussex and Durham short-horns.

The Chairman said that some of the short-horn cows which he had seen in Durham were certainly the finest animals he had ever seen.

Mr. Barnes said that in choosing a breed of stock the object for which they were intended should always be kept in view, as well as the circumstances in which they must be kept. He should recommend, for persons who wanted cows merely for the dairy, and who had no great quantity of pasture, the breed of Alderneys. He had seen a breed between the Southdown and the Sussex, which gave more milk, and he considered were preferable to the Sussex for the dairy. If they wanted to have a good breed, however, for general purposes, he did not know of a better breed than the Sussex. They were not so profitable for the dairy as some others, but where it was usual to breed or buy a certain number every year, and sell a certain number every year to the butcher, he did not know of a better breed. He did not think that the half breed of Durham and Sussex would stand the work. He had seen Devons introduced, and had remarked that they were excellent workers, with a very light step; he thought indeed better workers than the Sussex; but they did not produce so heavy a carcase. If the object was, however, to produce a good bullock, without carrying more than can be helped off the farm, the Sussex was the best breed. The calves would require much attention the first year. In the second year they must be put into the yards, where not the best hay was given them, and in the third year they must be wintered on the best hay. Many of the farms in Sussex had a considerable extent of marsh land. When the bullocks were brought up from the marshes, a little oilcake was given them; by that mode as little money as possible was taken off the farm, and a good quantity of manure was obtained. In Mid-Kent a sufficient quantity of pasture land could not be spared for breeding, and the object of the farmer was to get that sort of bullock which would fat with the least expense. He had seen some very pretty little bullocks of the Scotch breed, such as would fetch the best price in the market. He had not seen many Irish, but the Sussex breed were purchased to a considerable extent at Biddenden and Robertsbridge fairs, and had generally come out to the satisfaction of the feeders. He did not think that the carcases of the Welch were generally large enough to give a sufficient return. With reference to sheep, Mr. Barnes gave the preference to Mr. Goord's breed of Kents, whose rams he had hired for the last two years, and with which he was much pleased, both as to wool and to stock; although he thought them not quite so heavy as some other Kents. Mr. Adams, of Nettlestead, and Mr. Dawes, of Ewhurst, had some very good sheep. In respect to the Leicesters, he did not think them so hardy as the Kents, nor did he believe that an acre of marsh land would yield as much with Leicester as with improved Kents. He had produced some hardy, pretty sheep by crossing the Leicester and the Southdown, but had not been able to get them uniform. He had found this breed, in Essex, herd together much better than Mr. Goord's, and consequently prove much better for the fold.

Mr. Beard, on being asked to give a history of the fine Sussex animals which he had exhibited at the cattle show, said that he had purchased a bull of Mr. Turley, of Rolvenden, knowing his stock to be good. He generally bred from eight cows, and made four of the cows bring up the eight calves. They had all the milk of these cows till they were ten weeks old, when they had learned to eat cut hay from troughs. He then turned them out to grass, and kept them till three years old, when he fatted them. He certainly thought the Sussex stock the best, and believed that they were much heavier for their size than the Durham. Any person not acquainted with the breed would in setting their weight almost invariably set them at 15 or 20 more than they really weighed, whilst the Sussex appeared to him to be as deceptive the other way, and would generally be set at less than they weighed. At the last cattle show Mr. Tassell had gained the prize for his short-horn bull, and he (Mr. B.) having in the evening afterwards met one of the judges, had asked him what he considered the difference of weight between the short-horn bull and the Sussex bull, shown by him (Mr. B.) That gentleman had said that he believed the short-horn bull weighed 50 stone more than the Sussex bull. When the bulls were afterwards killed it was found that the Durham weighed 147 stone, and the Sussex 163. The gentleman who had been thus deceived was considered a very excellent judge of stock, but he believed that almost every one was liable to be similarly deceived. In the above case Mr. Tassell's bull had been, he believed, quite as well fed as his, which had had very few turnips, and very little cake. Mr. Selmes had told him that he had tried some short-horns, but had found that they would not stand his manner of feeding. In regard to sheep he also preferred Mr. Goord's breed to every other.

Mr. Elvy said that he had never been able to fat beasts at a profit, and consequently his object had always been to fat those by which he should lose the least. *(A laugh.)* He believed the mode by which least loss could be sustained would be that of buying chance heifers and keeping them till they calved down in the spring. If he fatted, he should rather buy the Sussex breed than any other if he could get them at any reasonable price.

Mr. Barnes spoke very highly of yarding sheep during the winter, whether for fatting or feeding, as if they were kept well littered on a layer of mould on the bottom of the yard, the warmth and comfort caused them to make unusual progress on a small quantity of food. Care must be taken, however, to turn them out occasionally, to prevent them from being stenched. He thought yard feeding sheep might perhaps answer Mr. Elvy's purpose better than bullock feeding.

Mr. Elvy said that he had fatted nearly 400 sheep in his yards. They would stench in yards if not kept constantly littered, but he was satisfied if they were properly attended to, and not placed too thickly, with the usual quantity of provisions they would fat one-third sooner. Next year, in preference to feeding bullocks, he should buy some Dorset ewes which would lamb down early. This plan had been very successfully practised in Essex. He thought the best sort of milch cows he had seen was a cross between Alderney and York, which he had known to give as much as 13lbs. of butter per week.

Mr. Rutley said that he had yarded many sheep on hay and cake, and plenty of water, when he was unable to get turnips for them, and had found them to succeed very well; indeed much better in the yard than laying out on the damp soil. He had for seven or eight years kept about 150 in yards. His yard for 100 sheep was about four rods square. He had a large quantity of poor pasture, and generally found the Southdowns answer his purpose best. In wet weather he littered his yards every other day.

Mr. Davis stated that he had been accustomed to the Herefords, which were very great favourites in the county in which they were bred, and he had not seen anything to compete with them for fattening, except the short-horns. He, however, preferred the short-horns to any other, as they were very hardy, good handlers, good milkers, and came early to maturity. In the north of England the usual course by some very good farmers was to let the calves suck the cows till they were three days old; they were then fed by hand on, first, half new and half flet milk, with some hay tea, and a little hay in the racks for them to learn to eat, gradually diminishing the new milk till they were ten weeks old, when they were weaned altogether and turned out to grass. They had in the first winter some good meadow hay in a yard from which they could run out all the winter. In the next summer they had pretty good grass, and in the following autumn, when they were two years old, they were taken into a yard, where they were fed during the winter on straw and turnips. In the next summer they had the very best pasture, and were taken to the yards in the winter and fed on oat or barley straw and Swedes, till they went out fat. They never had cake at all. These were the Teesdale breed, which he intended to try here. No hay was given them. He knew Herefords that had nothing but wheat straw since they were twelve months old. He thought a cross from an Alderney cow by a Sussex bull the best breed for the dairy. He had seen some of these full as large as the Sussex. He had some young bulls out of Alderney cows, which would weigh twenty stones at ten weeks old. With reference to sheep, he had always used the Southdowns. He had yarded, and also stall-fed them, and beleived that the latter mode would beat the former. He usually haltered the sheep as he would cows, and fed them as he would stall feed bullocks, and generally found them gain flesh faster in this than in any other way.

Mr. Barnes, in corroboration of Mr. Davis's statement that hay was not universally used for fatting bullocks, said that the most profitable lot of bullocks he had ever fatted had been on wheat, which he had bought at 32s. per quarter, which he had had crushed, and mixed with a small quantity of bran.

Mr. Manwaring said that he had advantageously wetted grain for such a purpose.

Mr. Adams, whose breed of sheep had been very highly spoken of by several preceding speakers, on being called on, said that he had bred from Mr. Goord's rams, which were, he belcived, called the improved Kents. Some of his tegs were now fit for the butcher at a little more than twelve months old. He had had some of these tegs killed, and had found them to weigh 11½ stone. They had had each, half an oilcake a day and some Swede turnips cut in the yard. He had taken some pains for the last ten years in selecting his ewes, and had found the breed particularly hardy, and inclined to fat faster than any other sheep he could get. He generally raised 120 or 130 ewes each year, but had never fatted his lambs till this year. He gave them as many turnips as they would eat, and a very little hay.

Mr. Adams (of Appledore) said that he had much improved his flock by Mr. Goord's rams. and having tried several other sorts, found that he could not get any other suitable to his land. Those sheep had nearly driven the bullocks out of their district. Mr. Adams spoke very highly, however, of the best Sussex breeds.

Mr. Cull gave a very interesting history of the success of Mr. Goord's sheep.

The following resolution was passed on the motion of Mr. Barnes, seconded by Mr. Elvy :—

"Resolved—That it is the opinion of this meeting that the Sussex breed of cattle are very good, and perhaps, all things considered, are the best kind. For the purposes of milk and butter, the Alderney kind are well suited for small dairies; for larger a cross between the Sussex and South Wales, or Sussex and Alderney are very good; it is believed that a little of the short-horns, blood might be introduced with some advantage. The Kent sheep for general purposes are also very good; Mr. Goord's breed are considered a superior kind. For folding, the Southdowns are more suitable than the Kents, the improved Kents being, however, considered best for general purposes. When winter keep is short, sheep may be put into a yard with advantage, both for the purpose of fatting or of common feeding; in that case, some mould should be put in the yard previous to littering, and the sheep kept clean."

The monthly meeting of this useful society took place on Thursday, August 27, C. G. Whittaker, Esq., in the chair. The attendance of members, in consequence, we presume, of its being harvest time, was not so numerous as usual.

Previously to commencing the adjourned discussion, the Secretary called the attention of the meeting to the following communication from Mr. R. Golding, of Hunton:—

"Gentlemen,—As it is but fair that I, who have presumed to advise the *trial* of a different system of clover hay-making to that generally practised in this neighbourhood, should be able to show that I have tried it myself, and also having been requested by some of my fellow members to submit samples of hay so raised for inspection, I lay before you samples of hay made from clover and Italian rye-grass, and also from tares.

"The management of the clover and Italian rye-grass was as follows:—Mown on Saturday (June 11th), turned in swathe on Monday, and cocked in very large cocks on the same day. Laid in cock until Friday, when it was spread out a little, and carried in the afternoon.

"Management of tares:—Mown on Monday (June 20th), in a meadow (as I wished to clear my field to prepare for turnips), until Friday, then cocked up until Wednesday, on which day they were spread out. Turned on Thursday, and carried in the afternoon.

"The weather was generally fine, but the advantages of the cocking system must, to say the least, under these circumstances, be fully as great as in bad weather.

"To those of our friends who attach but little importance to the colour, I should urge that the advantages combined with it are threefold—fragrance, preservation of the leaf, and nutritive qualities.

R. Golding."

The samples of hay were much admired by the members present for their beautiful green colour, their retention of almost the whole of the leaf, and a very unusually large proportion of the succulent juices. It was admitted on all hands that no hay could be got up in finer condition.

The discussion on the best agricultural implements was then resumed. Some conversation took place on an improved Kentish plough which had been furnished to Lord Torrington, and also to Mr. Elvy, for three horses, and which had been found to do its work uncommonly well, where the land was hard.

Mr. Barnes recapitulated some points which he had urged at the last meeting respecting ploughs; and with reference to the subsoil plough said that he did not think that it would prove of much service in the stiff clays of the Weald, unless the land was drained; but that after it had been drained, he believed the subsoil plough would prove highly advantageous. With reference to drills, Mr. Barnes said that he preferred the Suffolk drill to that of East Kent, particularly when the land was wet, as in that case the shares of the latter turned over the furrow slice, whilst the Suffolk drill, which had no shares, but a kind of coulter, deposited the seed without moving the furrow slice. In the adhesive soils of the Weald of Kent, the East Kent drills were very seldom found to answer. He had found the Suffolk drill to answer exceedingly well in Kent and Essex. He had two drills of this sort, one of sixteen rows and another of fourteen rows. He believed that smaller ones were made, but he should recommend the larger ones, on account of the greater quantity of land that could be drilled by them in the same time. With his fourteen-row drill he had done twelve acres per day, and with the one with sixteen rows fourteen or fifteen acres. The use of the drill caused a considerable saving of seed. Where he should sow five bushels of oats he should drill four bushels, and where he should sow three bushels of wheat he should drill two and a half bushels; and he believed that these smaller quantities would produce as good a plant when drilled as the larger when sown. There was also a great advantage in being able to hoe after drilling. Hoeing was not necessary in the Weald of Kent; but in Essex, where he was obliged to hoe, drilling was indispensable. With reference to harrows, he knew none more suited to this locality than the West Kent common harrow. Those with thirty-five tines drawn by four horses were very useful in stirring the land. He had found a set of harrows for two horses to do as much as five or six acres per day, in a manner which was quite equal in effect to one stirring with the plough. In Essex their harrows were made of a size to suit the width of the stetches; they were fastened together like folding doors, and drawn by horses which walked in the furrow. This plan answered on the Essex soil, but would not answer in the Weald of Kent. In regard to rollers, Mr. Barnes said that he believed the iron roller to be the best they had, when made in three divisions, as, by this separation, the disadvantage of skidding in turning was prevented. He thought that the iron-bound or "strake" roller, as it was generally termed, besides its disadvantages in turning, frequently cut the corn to pieces by the inequalities of its surface. He considered it, however, very good for fallow rolling, but bad for general purposes. In reference to hop-nidgets, he said that he should recommend the nidget to be wide enough to cover the whole width of the alley. The carts best suited for use in this district ought to be light carts, such as can be drawn by one horse, the cost of which was about 9*l.*, the wheels being about 4½ inches broad. He believed that the heavier carts used in East Kent and other places frequently broke through the frost and cut into the soil, when the one-horse carts would not have done so. The Kentish waggon he considered was the best he had ever seen for general purposes. It answered every purpose required of a waggon, and would not tip over so easily as many he had seen of a lighter construction. The Kentish bavin tug was a sort of vehicle between a timber tug and a waggon, but he did not think its use advisable, as it answered no purpose which a waggon would not effect, and cost two-thirds as much. It was useful for wood work and hay carrying, but was very inconvenient for carrying sacks or hops.

Mr. R. Golding had sent a hand manure drill for the inspection of the members, having been fitted with two improvements, which Mr. Golding thus described :—

"GENTLEMEN, — Having, in common with others who have used a hand manure drill, found much difficulty in regulating the supply by the usual grooved cylinder, through a constant disposition in the manure to fill up the grooves, and to *arch over ;* I have made an attempt to remedy this defect by introducing stirrers, which revolve in the manure, and keep it in constant motion. The rapidity of their revolutions may be easily regulated by the size of the chain wheels.

"The supply is regulated by the slides, to which I have adapted different angles ; thus, in a great measure, removing the danger of choking, so generally experienced with parallel straight lines which give the same diameter all through.

"The specimen before you is but a rude adaptation of my ideas to a drill made on a different principle, and is open to much improvement in the details when constructing one for the purpose. Amongst other improvements the hopper should be as upright as practicable, thus giving room for larger stirrers, and lessening the inclination in the manure to arch over, by reducing the support given to it by the wedge shape of the hopper. Perhaps the stirrers may be increased in number, and be made to revolve faster, but as the present adaptation of the principle acts well, and does not oppose any perceptible resistance to the moving power, there may be some danger in increasing that resistance.

"As the stirrers never suffer the manure to be at rest, it is deposited evenly in any required quantity.

"If there is anything in the principle worth adopting, it is available to any kind of manure drill. "R. GOLDING."

The value of the improvements were universally admitted, and Mr. Golding further explained that he had only intended it for adaptation to the land manure drills of persons whose land was suited to growing turnips only on a small scale. The larger drop drills had been already furnished with a contrivance for the same purpose.

After some further conversation the following resolution was carried unanimously :—

"Resolved,—That in exercising a choice of ploughs and every other agricultural implement, the properties of the soil and the local circumstances must be considered ; that the turn-rist plough, although it has not been found applicable to the soils of other counties, has yet been found better than any other in Kent, where deep ploughing and turning over the soil is found best adapted for keeping it clean and pulverized. Mr. Smart's improved Kentish plough, for three horses, has been found well adapted for unvarying, free-working soils. The Suffolk drill, on all soils, but particularly on stiff soils, is generally considered decidedly preferable. Rollers in three divisions are generally preferred."

An interesting conversation ensued as to the use of machinery superseding manual labour, for which, however, we regret that we have not room. Suffice it to say, that all present concurred in the view most ably and spiritedly advocated by Mr. Barnes, that if the farmers were to open their ditches, clear their lands of weeds, and drain them, there would be sufficient profitable occupation for all the labourers who could be found, and who would thus be relieved from those injuriously laborious occupations in which horses or machinery should be alone employed.—*Maidstone Gazette.*

EXTRAORDINARY FARM PRODUCE.

Notwithstanding all that has been said and written on agriculture in Ireland, and besides the many instances of successful practice in parts of the country, comparatively little is yet known of the real fertility of the soil, and immense capabilities of this hitherto neglected part of the empire. The people know not the extreme powers of their land, for in few instances has a farm been brought by judicious cultivation to the maximum point of its production. Perhaps the most successful example of what land is capable of, under proper management, in Ireland, and what immense crops can be raised, may at present be seen on the national model farm, under the Board of Education, at Glasnevin, near Dublin. This farm is strictly conducted on the improved system of green cropping and house feeding. The farm contains fifty-two statute acres, is conducted on a scientific rotation; on it are kept during the year twenty-two head of cattle, with three horses. It supplies on an average ninety persons during the year with farm produce, such as milk, butter, potatoes, vegetables, &c., &c., and the farming establishment with pork, besides a number of private families in the above articles : a considerable quantity of vegetables are carried to market, and all kinds of grain which is abundant. There is at present a crop of oats upon the farm, the produce of fourteen and a half British acres ; it is secured in eight stacks, and is estimated by the best judges to be equal to the average produce of fifty acres. It stood perfectly close upon the ground, averaged six to seven and a half feet in height, the head and ear corresponding. The other crops, potatoes, turnips, Italian rye-grass, &c., &c., of like quality. The manager conducts the farm on his account, pays 257*l.* 7s. 8d. per annum of rent, besides other expences, amounting in all to upwards of 400*l.* per year ; and we are informed and believe that he realizes a very handsome annual sum from it besides. He labours and manages it almost exclusively by a number of boys, agricultural pupils, and teachers, who are there in training in the science and practice of agriculture.

As a test of what land is capable of producing when brought to its maximum point, there are few examples such as we have in this particular instance ; there is perhaps more crop raised, more cattle kept and fed, more human beings supplied with the common necessaries of life, more manure accumulated, more employment given, and, in fact, more money made, on this spot of ground, than on any farm of the same extent (conducted on a proper scientific rotation of grain and green crop) in any part of the empire, or the world. Did the average land of Ireland produce only one-half the value according to quantity that is on the model farm, we should hear no more of corn laws, tariffs, or want of employment among the people.

A Visitor.

LIVE STOCK ON THE CONTINENT.

The following Letter has been addressed by Mr. Pagan, cattle salesman, Liverpool, to the Editor of the Dumfries Courier:—

Dear Sir,—According to promise, I now send you additional particulars of my late tour.

Leaving the Rhine, at Frankfort, I crossed through Germany as far as Liepsic, and found it in appearance very similar to France. The whole country is divided into small patches of from 1 to 10 or 20 acres; 30 is considered a large farm, and an exception to the general rule. The Germans are an industrious people; and, from the prices they have been receiving of late years for their grain, it has encouraged them to cultivate every spot they could get the plough into, and I think it is overdone. They use very little manure; and, although they have a fertile soil and excellent climate, all land will get exhausted after years of excessive cropping; and I am of opinion they have grown, as far as I saw, as much grain as ever they can again.

There is a great extent of the finest country ever seen for green crop; and I have no doubt, from some little spots of nice mangel wurzel I saw, that turnips would grow well, but they could not be cultivated to advantage on such a small scale. I saw no cattle all the way; what few the farmers have are kept in the house. A few flocks of sheep were to be seen in the same starved state. They appear to consider that management best which keeps the wool fine, and have little or no regard for the carcasses. In Holstein and Jutland, the farms are larger, the land good, and a deal of fine cattle kept, which they send in considerable numbers to Hamburgh, at the end of the year, fat. The day on which I attended Hamburgh market, there were only 380 cattle shewn, very few of which would have done for the English market, either as fat or lean; also, about 900 sheep, so decidedly inferior that they are not worth noticing, and could scarcely be sold in this country at any price. But a June is generally a poor show of stock in all countries, the stall-fed articles being done, and the grass-fed not ready. In the months of September, October, and November, there are often large shows of from 1400 to 1700 weekly; but even then the price seldom drops, as that is their time for putting up salted provisions, and the numbers make little difference. Beef, at Hamburgh, all the last, was fully a third higher than for the five previous years. The present retail price is about 5d. per lb. of 1½ ounce more than ours; therefore it is only our prime cuts that make much more, there being plenty of coarse sold at the same price. It is probable there will be some importations—and, if prices remain as at present in both countries, some little profit may be made; but I am convinced were we to import 400 or 500 beasts weekly, for two months, which would make no material difference with us, we should impoverish the whole Continent, and the price would be higher than here. Under these circumstances, I may say the same of salted provisions. They may come in large quantities from other countries, but I do think the agriculturists have nothing to fear from the Continent. It may be said the country has great capabilities, and that stock will increase: but I am of opinion their own wants will increase in proportion; and there are not the facilities for improvement that may be imagined. The great drawback is the uninclosed state of the country. Travel over a thousand miles, and you will find neither a boundary nor a subdivision fence; and what can be done with stock of any description on patches of five, ten, or even twenty acres? They may continue to send corn, but I think they will have little else to send: therefore, the British farmers need give themselves little uneasiness on that head.

I will now add a few remarks regarding the trade at home. All are aware of the great improvement that has taken place during the last half century. I believe it is not more than thirty years since there were not turnips enough in Dumfriesshire sufficient to finish ten score of sheep; now there are twice as many thousands fed within a very little circuit. Has this great increase reduced the price of meat? Certainly not. Also, within the last twenty years, I believe the import from Ireland has increased in the same proportion, and with no reduction in price; on the contrary, the reverse has been the case. Look at the last three years, when the depression of trade has been unprecedented; the average price of meat kept higher than during any three years since the war. There have been, and will continue to be, ups and downs, which may naturally be looked for; at present things are considerably lower than last year, in a great measure occasioned by the accumulation of stock in good seasons, but more particularly from the consumption being curtailed by the long privations of the labouring classes, and therefore cannot be attributable to any effect of the tariff. I am glad, however, to know that trade is decidedly improving, whatever the croakers may affirm to the contrary: and trust (the worst being past) we shall have a steady business, and that all parties will participate in the beneficial effects of the change. Regarding the southern part of Scotland, most of the farmers are in the habit of keeping far too much stock, and sending them to market in an unfinished atate, whereby they often pay little or nothing. They also, by doing so, increase the price of store, which is allowed to be too high. If fewer were kept, and these made fatter, the grazier would find it more to his advantage. For instance, in laying sheep on turnips at the latter end of the year, it is calculated the crop will last such a time, independent of casualties; but something may occur in the course of the winter whereby the feeding gets short, and they are forced to market at an improper time, and often completely sacrificed. I never saw a very bad time when there was plenty of food to be had; therefore, it would be well to keep within the number rather than to exceed it, as it is better to sacrifice the turnips than the sheep. I trust the Scotch feeders will see the propriety, and act accordingly; and they may rest assured they will be better paid at last.

I am, &c.,

John Pagan.

THE TARIFF AND THE INCOME-TAX.

Sir,—Sir Robert Peel's Tariff, Income and Property Tax, is now about to take effect; we therefore must look better to ourselves than we have hitherto done. Having visited the great agricultural meeting at Bristol, I found that in the south-western counties cider was a common and wholesome beverage during the summer. I have been in the habit of having sixty to eighty bushels of barley made into malt for the consumption annually of my family. I now have made up my mind to have half that quantity made, and as a substitute for the other half I shall make my apples into cider, which said apples now bring in our market, if good, from 3d. to 5d. per score lbs.; this is occasioned by the low import duty on foreign fruit. Only a few years ago, previous to the duty on foreign fruit being lowered, apples were sold in this country to go to the manufacturing districts at 1s. 3d. to 1s. 6d. per score lbs.; pears 2s. to 2s. 6d. The price now of pears varies from 9d. to 1s. 3d. per score lbs.; and I will ask to whom is benefit given? to the foreigner to be sure; and the cultivator of fruit trees and nurserymen are thrown out of employment in this country. I now, Mr. Editor, ask and will feel obliged if any of your correspondents will, through the medium of your paper, tell me what quantity of apples will make a gallon of cider; what a machine for crushing the fruit will cost on a small sale; and the practical part of the process in making described; also the proper time of the year; or is there any publication in print with directions how to make perry and cider? The new taxes have given rise to these inquiries. I must set straight one way or another. If I am taxed for my farm and my income, I must forego the pleasure of a game certificate; I must have my wheels lowered, like some of my neighbours, to under 30 inches; I must save half the duty on sixty or eighty bushels of malt annually. When the labour of our own operatives was protected, I never flinched from paying my full share of the taxes; but now I must confess things have a very different aspect, when I see a law in force, where an income of 149*l.* 19s. 11d. is to pay no tax, and that income may be that of a bachelor; and another that has 150*l.* a year, with probably a large family, to be taxed at 7d. in the pound on his income. How is this, I will ask common sense if it be just? The same rule applies to farms of 300*l.* a year to be taxed, whereas a shilling a year less evades the tax. It is not uncommon in farms of 300*l.* a year, that one farm may be carried on with a capital of 500*l.* to 1000*l.*, whereas another farm of the same rent may require 2 to 3000*l.* to carry it on to advantage. The legislation is impotent and infirm, and cannot carry out long. At the same time I will admit that a Property Tax, either on real landed property, on money in the Funds, or at interest on security, such a tax is the best that could possibly be devised; and as to real property (commonly called landed), nothing could be more easy to manage. For example—all the land, houses, and premises in this kingdom are, or ought to be, rated to the poor-rate, and is rated with few exceptions indeed; and every freeholder who has 40s. a year has as good a vote as a person of 100,000*l.* a year; therefore, surely, as he has a right by his vote to give us parliamentary legislators, surely he has a right to be taxed: and if all the property in the kingdom was rated according to each man's proportionate share in the poor-rate book, the overseer in each township might collect the tax free of expense, and pay it over to the receiver of taxes—thus sailing clear of all the new appointments to place and pensions. By this means, all the property would pay (real property), instead of which more than half the property in the kingdom will pay nothing; but, Sir, by my plan, the rate, if I may take my own locality as a criterion, at say 2½d. to 3d. in the pound on the poor-rate, would raise more money than Sir Robert Peel's 3½ pennies and sevenpennies. The tax would fall equally on every one; none would grumble (at least, very few). The tax is now inquisitorial and unjust, and serves to make John Bull's children dissatisfied. Think for a moment on a clerk in an office or an agent with 150*l.* a year, with a large family, who probably, or in many instances, is not allowed by his employer to accept any other situation, he having a large family to maintain—I say it is a hardship, and a gross hardship on him, who has no life interest, but only from year to year, or may be discharged at a month's notice. Also sliding scales are always bad, holding out only encouragement to trickery and fraud. The country asked for a repeal of the Corn Laws, and a fixed duty on grain; and I wish Sir Robert had confined himself to that, and adopted Lord John's measures instead of his Tariff; he would then have had the blessings of three-fourths of the population instead of the —— of all. Neither Tory nor Whig are satisfied with his measures.

Mr. Editor, we are in the midst of harvest. I am cutting on my farm at the rate of twenty acres per day. I am giving to reapers three halfpence for ten sheaves, and to mowers 6s. to 7s. an acre for mowing and setting up; men in the house 10s. to 12s. per week, with bed, board, and beer. The crops are not heavy in straw, but well filled; the weather is remarkably fine; turnips offer to be splendid. Stock in autumn is expected to be lower, on account of the Tariff and short crops of hay. Trusting to an improvement in our legislation the next session, I beg to subscribe myself,

A Westmorland Farmer and Grazier.

August 23, 1842.

AMATEUR REAPING.—A correspondent sends us the following:—"On the 22d instant, being Ludlow fair-day, a party of gentlemen met at the Elephant and Castle Commercial Inn to regale themselves. During the evening the conversation was chiefly on the harvest, and finally on the propriety of mowing wheat, a practice resorted to in the greater part of the neighbourhood. Mr. T. Kinnersley, of Clunton, son of the late T. Kinnersley, Esq., of Preston Wynne, near Hereford, remarked the inutility of mowing wheat when men were to be found that could cut with the broad hook an acre per day, which gave rise to the question, "Who can?" Mr. K. replied, "I can." Some of the party being incredulous as to the feat being performed, a wager was laid between Mr. Kinnersley and Mr. Tait, of the Bach, which amounted to a considerable sum. Mr. Kinnersley was backed by E. Downes, Esq., Broome; W. Blockley, Esq., Broadstone; R. Carter, Esq., Ashford, &c.; on Mr. Tait's side were,—Bishop, Esq., Sibdon Castle, Mr. M. Evans, the landlord of the inn, &c. The feat was to be performed on the Wednesday following. Mr. T. Langslow, of Abcott Hall, who was present, with his wonted good nature, kindly gave permission for an acre of wheat in his field to become the scene of action. Mr. K. was allowed from five o'clock, a.m., until eight o'clock, p.m. E. Dawes, Esq., New House, who measured the ground, was chosen referee, and A. Woolley, Esq., Abcroft, umpire. The wheat stood well, though a strong crop. The amateur reaper, undaunted, entered the field, and, as the adjacent village clock struck five, he commenced his labourious undertaking, and nobly won his wager in 13½ hours, being an hour and half under the limited time, apparently without fatigue, and was loudly cheered by his friends and supporters.—*Hereford Times.*

AGRICULTURAL RESEARCHES.

ON REAPING WHEAT.

BY MR. JOHN HANNAM, NORTH DEIGHTON, WETHERBY, HONORARY AND CORRESPONDING MEMBER OF THE NEW YORK STATE AGRICULTURAL SOCIETY.

(From the Quarterly Journal of Agriculture.)

In a former paper on this subject, I declared my intention of continuing my researches on the proper time for reaping wheat, and of giving the results to the public. Having now completed those investigations, it only remains for me to fulfil the latter portion of my promise. Before doing this, however, I would premise, that the interest which my former experiment excited, not only at home, but also in our colonies, and the United States, induced me to carry out my design upon that scale which I deemed most likely to produce valuable results, and to devote to the subject that care and observation which its importance deserved. In accordance with which determination, not one single operation (neither reaping, stacking, thrashing, dressing, grinding, nor weighing), was carried on without my immediate superintendence. And although the execution of this determination involved the sacrifice of much time and leisure, the results have amply repaid me; by enabling me (as I predicted) to corroborate my former calculations, and to strengthen them by the details of my own positive and practical experience.

The field of wheat chosen for my experiment was an even average crop, the soil thin limestone, and the seed the old square-headed red—the same experimented upon before. In the former case, however, the grain was cut at three periods, with an interval of a fortnight between each cutting. In order, therefore, to make the experiment more valuable, and to fix more accurately the golden mean between the too green and the too ripe, I had 20 perches of adjacent furrows reaped at the following periods:—

No. 1, reaped August 12th, stacked August 26th.
No. 2, do. August 19th, do. August 31st.
No. 3, do. August 26th, do. September 5th.
No. 4, do. August 30th, do. September 9th.
No. 5, do. September 9th, do. September 16th.

On stacking the various cuttings, I took a sheaf from each parcel, for the purpose of exhibiting a sample of the grain of each at the annual meeting of the Wetherby Agricultural Society, held September 22d, 1841. It was also my intention to have sent the same samples, after the above meeting, to the Show of the Highland and Agricultural Society of Scotland, at Berwick, and for this purpose Mr. Stephens kindly forwarded to me the necessary certificate; but to my disappointment, I found that I could not get them forwarded in time.

"As in my former experiment, the sample of the ripe wheat, No. 5, appeared bold but coarse, while the green, Nos. 1 and 2, were finer in the skin, but smaller in size. The raw cut, No. 3, however, was unexceptionable as a sample; being equal in boldness and fulness of grain to No. 5, and superior to Nos. 1 and 2 in the thinness and uniform clearness of skin. Scarcely any difference was discoverable between 3 and 4; the latter was, however, rather more rough to the touch than the former.

This superiority of the raw cut grain was observed and acknowledged by hundreds of practical agriculturists at the meeting alluded to, and was confirmed by the judges, who awarded to me one of the extra premiums, with a high commendation of the sample No. 3, reaped a fortnight before the ripe."*

On February of the present year the whole of the various cuttings were thrashed and dressed under my own eye, when the following were the results.:—

No.			st.	lb.		st.	lb.	
1 gave	$2\frac{3}{4}$	bush of wheat weighing	11	12	&	22	7	of straw.
2	$2\frac{1}{2}$	..	11	1		21	3	..
3	$3\frac{1}{2}$	..	15	10		20	8	..
4	$3\frac{11}{16}$	..	16	6		19	2	..
5	$3\frac{1}{2}$	..	14	13		18	0	.

Having in my former trial ascertained the value of the various samples by the opinion of the market, and in this case confirmed it by the public decision of the judges at an agricultural meeting, I determined, in order to leave no loophole for doubt, to test their qualities at the mill, and to see in what, and to what extent, the difference of quality existed. Having, therefore, to prevent mistake, affixed my own seal to the sacks, and placed them under the care of Mr. John Hardcastle, of Hunsingore Mills, near Wetherby, the gross quantity of each variety was ground and dressed with the following results:—

	Gross Quantity.	Weight of Grain.		Weight of Flour.		Pollard or "Sharps."		Bran.		Waste
No.	Bushels.	st.	lb.	st.	lb.	st.	lb.	st.	lb.	
1	$2\frac{1}{2}$	11	12	8	12		12	2	1	1
2	$2\frac{3}{4}$	11	1	8	6		11	1	11	1
3	$3\frac{1}{2}$	15	10	12	6		12	2	1	5
4	$3\frac{11}{16}$	16	6	12	3	1	3	2	5	9
5	$3\frac{1}{2}$	14	13	10	11	1	9	2	5	2

From the foregoing results, then, we deduce the following table of the quantities of flour, seconds, and bran, per bushel, from each parcel:—

	Flour.	Pollard.	Bran.	Weight per bushel.
No.	lbs.	lbs.	lbs.	lbs.
1	$45\frac{1}{11}$	$4\frac{4}{11}$	$10\frac{6}{11}$	60
2	$47\frac{1}{5}$	$4\frac{2}{5}$	10	62
3	$49\frac{5}{7}$	$3\frac{3}{7}$	$8\frac{2}{7}$	$62\frac{6}{7}$
4	$46\frac{22}{59}$	$4\frac{35}{69}$	$8\frac{56}{59}$	$62\frac{22}{59}$
5	$43\frac{1}{7}$	$6\frac{4}{7}$	$9\frac{3}{7}$	$59\frac{5}{7}$

The same data furnishes us with the quantities, per cent., of flour, pollard, and bran, yielded by each parcel; thus, 100 lbs. of grain without waste—

	Flour.	Pollard.	Bran.
	lbs.	lbs.	lbs.
No. 1 gives	$75\frac{5}{33}$	$7\frac{9}{33}$	$17\frac{19}{33}$
2 ..	$76\frac{18}{77}$	$7\frac{11}{77}$	$16\frac{18}{77}$
3 ..	$80\frac{40}{43}$	$5\frac{25}{43}$	$13\frac{21}{43}$
4 ..	$77\frac{83}{221}$	$7\frac{153}{221}$	$14\frac{206}{221}$
5 ..	$72\frac{196}{207}$	$11\frac{23}{207}$	$15\frac{195}{207}$

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* I quote from the public report of the meeting. *Vide* "Yorkshire Gazette," and "Leeds Intelligencer," for September 25, 1841.

From this it appears, that had not the very green failed in quantity, it is superior to the ripe in quality—making more flour by 2 per cent.; while the raw, No. 3, is superior to all the other varieties. Thus, the bushel of No. 3 gives more flour than the bushel of No. 5 by 6$\frac{4}{7}$lbs.; shewing a gain of 15$\frac{1}{7}$ *per cent. in weight of flour upon equal measures of grain.*

We also find that 100lbs. of wheat, No. 3, makes 80$\frac{40}{44}$ bs. of flour, while 100lbs. of No. 5, yields 72$\frac{196}{207}$lbs., showing an advantage of 7.984, or nearly 8 per cent., in favour of No. 3 upon *equal weights* of wheat.

To those who are acquainted with Mr. Hardcastle, it will be unnecessary to say, that neither ignorance nor design produced these results. And, when I state that he devoted his attention for several hours, and a portion of his machinery, to the exclusive trial of these wheats, it will be of little use to add (though such was the fact) that every operation was conducted under my own eye, and that each parcel underwent an exactly similar process. Indeed, I must say that Mr. H. entered into the investigation with a spirit fully equal to my own, and conducted it with a skill that left me nothing to do but to thank him. And surprising as the results of this investigation may appear—surprising as they appeared to me—I must give Mr. Hardcastle credit for anticipating them in some degree; for, before the operation of grinding was concluded, he expressed to me his pleasure at being chosen to carry out an experiment of such interest; " as a mark of which interest," added he, " I have no hesitation in saying, (and my opinion is confirmed by the senses of a practical miller—the sight, hearing, and touch)—that No. 5, the ripest wheat, grinds the worst—worse even than the greenest; a fact which few would believe unless they saw."

The results, as we have seen, fully confirmed Mr. H.'s opinion; and further examination explained the whole matter. In No. 5 we found a much greater quantity of flinty particles, which would not pass through the flour-sieve, than in any other; a fact which clearly explained why it should, in miller's parlance, " grind worst." The deficiency of No. 5, in yield of flour, when compared with No. 3, was accounted for by the difference in the quantity of the pollard (or sharps), and in the quality of the brans: the bran from No. 5 being coarse and heavy, while that from No. 3 was thin as a bee's wing. " Should a practical miller examine these brans, and be informed that they were from one sort of wheat," remarked Mr. Hardcastle at the time, " he would call No. 5 a very common specimen of grinding, and censure the miller; the other he would term a beautiful piece of workmanship, and say that the man who ground it knew how to prepare his machinery; yet the fact is, one miller and one mill have ground and dressed both."

The flour from the various wheats Mr. Hardcastle declared to be worth, at that time, 2s. 6d. per stone wholesale. The pollard he valued at 1s. 3d.; and the bran at 10d. per stone. Taking the straw at 2d. per stone, the real value of the respective cuttings will stand thus:—

No. 1.	£	s.	d.
8st. 12lbs. of flour, at 2s. 6d. per stone..	1	2	1½
12lbs. of pollard, at 1s. 3d............	0	1	0¾
2st. 1lb. of bran, at 10d................	0	1	8½
22½st. of straw, at 2d..................	0	3	9
Total value of the produce of 20 perches..	1	8	7¾

No. 2.	£	s.	d.
8st. 6lb. of flour, at 2s. 6d. per stone....	1	1	0¾
11lb. of pollard, at 1s. 3d..............	0	0	11½
1st. 11lb. of bran, at 10d..............	0	1	5¾
21st. 3lb. of straw, at 2d..............	0	3	6½
Total	1	7	0½

No. 3.	£	s.	d.
12st. 6lb. of flour, at 2s. 6d. per stone....	1	11	0¾
12lb. of pollard, at 1s. 3d..............	0	1	0¾
2st. 1lb. of bran, at 10d................	0	1	8½
20st. 8lb. of straw, at 2d..............	0	3	5
Total	1	17	3

No. 4.	£	s.	d.
12st. 3lb. of flour, at 2s. 6d. per stone..	1	10	6¼
1st. 3lb. of pollard, at 1s. 3d..........	0	1	6
2st. 5lb. of bran, at 10d................	0	1	11½
19st. 2lb. of straw, at 2d..............	0	3	2¼
Total	1	17	2

No. 5.	£	s.	d.
10st. 11lb. of flour, at 2s. 6d. per stone..	1	6	11½
1st. 9lb. of pollard, at 1s. 3d..........	0	2	0½
2st. 5lb. of bran, at 10d................	0	1	11½
18st. of straw, at 2d..................	0	3	0
Total	1	13	11½

Giving for the value of an acre of

No. 1.—cut a month before fully ripe.....	11	9	2
No. 2.—do. three weeks..............	10	16	4
No. 3 —do. a fortnight................	14	18	0
No. 4.—do ten days..................	14	17	4
No. 5.—do. ripe......................	13	11	8

The loss, therefore, upon the green plots is respectively *2l.* 2s. 6d. and *2l.* 15s. 4d. per acre; and the gain upon the plots (3 and 4) cut raw respectively 1*l.* 6s. 4d. and 1*l.* 5s. 8d. per acre, when compared with the ripe. It will be observed here, that the loss upon No. 2 is greater than upon No. 1, which arises from the former being less in quantity than the latter. But the grain of No. 2 was bolder, and a better sample than No. 1. We have seen from the foregoing tables that it also made more flour to the bushel than No. 1; it will therefore appear strange that the produce should not be equal, at least, to that of the other. In reply to this I would say, that it is scarcely possible to select two plots of ground, the produce from which will be equal in all respects; and therefore a slight variation in the produce may, in any case, be accounted for. In this case, however, another cause operated, I have no doubt, in producing the apparently anomalous result. Thus, owing to the plots of ground being reaped before any other in the neighbourhood, they were in spite of all precaution, robbed to some extent by the birds. Indeed, I have no doubt but that the loss upon the two cuttings 1 and 2 (especially upon the latter), would have been much less but for this circumstance; for though the desiccation or shrinking of the grain, from being cut too early, undoubtedly caused the quantity by measure of each to be less than that of the later cut samples, it could not, in my opinion, cause a difference of a bushel in 20 perches; nor could it have caused the measure of No. 2 to be less than that of No. 1—a far smaller sample.

In order, therefore, to see how much of the deficiency in measure was to be attributed to the shrinking of the grain by drying, and how much to the other accidental circumstances, I took a long glass tube—sealed at the bottom—of half-inch diameter, and partially filled it with water. Having made a mark on the glass at the point where the water reached, I made another some distance upwards. After this I poured grains of wheat from the sample No. 1 until the water's edge touched the top mark. The tube was then emptied, and a similar operation performed with all the samples.

From this I found that it required 1110 grains of No. 1, 1005 of No. 2, and 910 of No. 5, to fill the tube so far that the water rose to the top mark. Between Nos. 3, 4, and 5, I could not, after several trials, find any real difference—the variation scarcely ever exceeding 1 per cent., and that in favour first of one sample and then another.

From the foregoing test, however, we learn that, supposing the number of grains upon each portion to be originally the same, $\frac{1}{1110}$, $\frac{1}{1005}$, and $\frac{1}{910}$, will represent the comparative measures or spaces occupied by the produce of Nos. 1, 2, and 5 respectively; whence—

$\frac{1}{910} : \frac{1}{1110} : :$ 3½ bushels : 2.86 bushels, the produce of No. 1. And

$\frac{1}{910} : \frac{1}{1005} : :$ 3½ bushels : 3.16 bushels, the produce of No. 2.

Now, the value of the flour, bran, and pollard, of 2¾ bushels of No. 1 was found to be 1*l.* 4s. 10¾d.; therefore, 2.86 bushels give a value of 1*l.* 5s. 10½d. Similarly, the value of the flour, pollard, and bran of No. 2 was 1*l.* 3s. 6¼d.; whence the worth of 3.16 bushels is 1*l.* 9s. 8¾d. To these values of Nos. 1 and 2, add respectively 3s. 9d. and 3s. 6¼d., the value of the straw from each, and we have for estimated produce of 20 perches of No. 1, 1*l.* 9*s.* 7½d.; and of No. 2, 1*l.* 13s. 3d.

The following will therefore be as correct an approximation of the values of the acre cut at the times stated, as it is possible to come at—

	£	s.	d.
No. 1, quite green................	11	17	0
No. 2, green	13	6	0
No. 3, raw	14	18	0
No. 4, not quite so raw...........	14	17	4
No. 5, ripe.......................	13	11	8

Shewing a loss of £1 14s. 8d. per acre upon No. 1, as compared with No. 5; a loss of 5s. 8d. per acre upon No. 2, do. do.; and a gain of £1 6s. 4d. per acre upon No. 3, as compared with the ripe, and of £3 1s. per acre, as compared with the green cut No. 1.

Let me here observe, that much as the advantage is on the side of the raw (No. 3) wheat, it would, I have no doubt, have been somewhat more, had not the sheaves been subject, in a slighter degree than Nos. 1 and 2, to the pillage of the birds. For although No. 3 produced as much in measure as No. 5, it is reasonable to suppose that it should have produced more, as the waste caused by reaping and stacking the ripe was much greater than that made in harvesting the raw cut wheat. And in so small a number of shocks, a very few visits from the winged legions were sufficient to carry away more than was wasted of No. 5. But this is of no import. With the yield alike, the advantage of No. 3 over the ripe is striking enough. It is an advantage gained not in *any point open to variation* or uncertainty; it is not a superiority merely in *gross quantity* of produce, which many things might have tended to produce; but a superiority in the *quality* of the article produced—a better adaptation of the grain to make flour, and that to an extent by no means trifling. Thus, from data already given, we can clearly shew that, by wheat being cut raw, we have a gain of 15$\frac{1}{7}$ per cent. compared with ripe, of flour, *upon equal measures*; and a gain in the weight of straw of 14 per cent.; advantages which afford us a clear gain of 52$\frac{4}{7}$lbs. of flour upon every quarter of wheat.

A gain of 7s. 4¾d. in the value of every quarter of wheat.

A gain of 7s. 6¼d. in the value of every quarter of wheat, and the straw producing it.

A gain of £1 6s. 4d. upon every acre producing 28 bushels, and of £1 8s. 2½d. upon every acre producing 30 bushels; the quantity assumed as the basis of my calculations in my former experiment.

But there are other advantages arising from the early reaping, which, though they cannot be estimated by pounds, shillings, and pence, are not the less valuable. And although I discussed them at some length in my former paper, they are of too great importance in my eye to be omitted or slurred over in the least, when it is in our power to afford further evidence or practical illustration of their value.

For the sake of brevity, these advantages may be thus epitomised. With an additional quantity of flour and straw, already considered, we have *a better quality of both*, a better *chance of securing them*, and a *saving in securing them.*

Thus, the quality of flour as an article of food, and its power of affording nutrition to the body, are universally allowed to depend upon the quantity of gluten it contains."* Indeed, "it seems pretty well ascertained," says Professor Johnston, that those varieties of grain which contain the largest amount of gluten yield *also the greatest return of flour.*"

Now, No. 3 here yields a greater return of flour than No. 5; it ought, therefore, to contain the greater proportion of gluten. And such is the case. My own analysis of the flours, in their dry state, gave to the raw sample an advantage of 1¼ per cent. in weight of gluten. In order to test the matter further, I forwarded the samples to Professor Johnston, who favoured me with an analysis. In their ordinary state of moisture, he found them to contain respectively—

No. 3.............	9.15 per cent. of gluten.	
No. 5.............	8.9 —	—

Thus proving the statement that the wheats which give *the most flour, give the best flour*. And, although the farmer may not think much of this slight advantage in point of nutritive quality, it is no less a benefit both to the consumer and the producer—affording to the former more nutritive matter for the same money, and enabling the latter to enjoy the profit of quantity and quality combined.

That the straw of early cut wheat is of a better quality than that of the ripe, I fully proved in my former paper; and I need only refer to the same authorities. Indeed, the researches of every analyst prove, that the nutriment of plants consists in the soluble matter, that the greatest proportion of this soluble matter is present after the first flowering, and that at this time the plant is most digestible, and consequently most nutritive. But this is a fact which the most pragmatical farmer will not dispute. He knows that if he permits his hay to become too dry it loses a great portion of its excellence, and that if he would have a fat horse and rich manure heap his hay must look green. But indeed the case is without question. If we allow the soluble matter in the straw to be evolved, along with the water, by the action of the atmosphere, and washed away with the rains, (for it is soluble, we should remember, and, *after vegetation has ceased*, is easily extracted) we lose that portion of the food which gives strength and flesh to the animal, and food to vegetable life when the straw is converted to manure.

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* Davy's Agr. Chem., sect 3.; Johnston's Lectures on Agr. Chem. and Geol., &c.

But, indeed, it is impossible to put the case in clearer point of view than it is done by Professor Johnston, to whom I have had the pleasure of communicating the results of my experiments. "The period," says he, "at which hay is cut, or corn reaped, materially affects the quantity (by weight) and quality of the produce. It is commonly known that when radishes are left too long in the ground they become hard and woody—that the soft stem of the young cabbage undergoes a similar change as the plant grows old—and that the artichoke becomes tough and uneatable if left too long uncut. The same natural change goes on in the grasses which are cut for hay. In the blades and stems of the young grasses there is much sugar, which, as they grow up, is gradually changed, first into starch, and then into woody fibre. The more completely the latter change is effected—that is, the riper the plant becomes, the less sugar and starch, both soluble substances, they contain. And though it has been ascertained that the woody fibre is not wholly indigestible, but that the cow, for example, can appropriate a portion of it for food as it passes through her stomach; yet the reader will readily imagine that those parts of the food which dissolve most easily are also likely—other things being equal—to be most nourishing to the animal. It is ascertained, also, that the weight of hay or straw reaped is actually less when allowed to become fully ripe; and therefore, by cutting soon after the plant has attained its greatest height, a larger quantity as well as a better quality of hay will be obtained, while the land also will be less exhausted. The same remarks apply to crops of corn—both to the straw, and to the grain they yield. The rawer the crop is cut, the heavier and the more nourishing the straw. Within three weeks of being fully ripe, the straw begins to diminish in weight, and the longer it remains uncut after that time the lighter it becomes and the less nourishing. On the other hand, the ear, which is sweet and milky a month before it is ripe, gradually consolidates, the sugar changing into starch, and the milk thickening into the gluten and albumen of the flour. As soon as this change is nearly completed, or about a fortnight before ripening, the grain contains the largest proportion of starch and gluten; if reaped at this time, the bushel will be heavier, and will yield the largest quantity of fine flour and the least bran. At this period the grain has a thin skin, and hence the small quantity of bran. But if the crop be still left uncut, the next natural step in the ripening process is to cover the grain with a better protection, a thicker skin. A portion of the starch of the grain is changed into woody fibre, precisely as in the ripening of hay, of the soft shoots of the dog-rose, and of the roots of the common radish. By this change, therefore, the quantity of starch is lessened, and the weight of husk increased; hence the diminished yield of flour, and the increased produce of bran. Theory and experience therefore indicate about a fortnight before full ripening as the most proper time for cutting corn. The skin is then thinner, the grain fuller, the bushel heavier, the yield of flour greater, the quantity of bran less; while at the same time the straw is heavier, and contains more soluble matter than when it is left uncut until it is considered to be fully ripe."*

After this I need only add, that, if my labours have had any share in calling the attention of the Professor to this subject—should the result be nothing more than so novel a feature in a work of agricultural chemistry as this chapter "On the influence of the time of cutting on the quantity and quality of the produce,"—they have done better service to the cause than ever I anticipated, and have called into the field an auxiliary capable of bearing the whole brunt of the battle.

The better chance of securing the crop, and the saving in securing it, I allude to now merely to give practical corroboration to some of my previous arguments. Thus, in my last paper on this subject, I said—"The saving is self-evident. We gain a fortnight at the commencement of harvest. If the weather be good, we can secure a great portion of our wheat before we should scarcely have begun upon the old system. If not, we can wait so, under any circumstances our chances of securing the grain must be greater.

"If we look, too, at the later harvests, we shall, I venture to say, find that, in nine cases out of ten, the grain which was cut *first* was secured in the best condition. As an example of this, the crop of 1839 will suffice. The crops were backward, the harvest the same, and the result was, that, in the north of England, full 75 per cent. of the whole wheat crop was damaged; and full 75 per cent. of that which was uninjured, I will also venture to say, was that which was cut the first.

"The frequent occurrence of such years as this will teach the value of even a fortnight, better than anything that can be said here. And that they will occur again is beyond a doubt. What has happened *once*, *may* happen again; but what has happened frequently (as this sort of harvest has), with the same causes in operation, we are warranted in saying will happen again and *often*."

And it has already happened—happened, too, during last harvest. Thus, several fields of wheat in this parish were injured by the weather—several, too, were cut raw; yet in no one case was an early reaped crop injured in the slightest degree. So much for the value of a fortnight. One farmer, a near relation of mine, cut a field of the "downy Kent" wheat extremely early, and when he was stacking it, it was remarked that he had "cut grass and stacked muck;" yet, *mirabile dictu!* the crop (which was a light one), when thrashed, yielded more by four bushels to the acre than ever it was valued at, and was sold for the *very highest price in the market*.

As regards the economy in securing the crop, there is one most important saving, which, independent of the saving effected by the regular servants of the farm performing a greater proportion of the work (from the period of harvest being extended) by commencing early—setting aside the saving from there being no shaking or waste of grain by winds or by harvesting, is especially worthy of illustration. In my last I thus alluded to it:—"The wheat, barley, and oats, are often ripe at one time, and aware, as the farmer is, of the injury which strong winds and showers would do them, he has to hunt up labourers at any price. And after all this extra expense, it is extremely probable that, having the whole of his harvest upon his hands at once, he is compelled to let some part of his grain *have too little weather, and some too much.*

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* Elements of Agricultural Chemistry and Geology, p. 211.

"By commencing his wheat harvest a fortnight earlier, these evils would have been prevented; by the time that his barley and oats were ready, most or all of his wheat would have been cut, and some fit for the stack, and that, too, by the exertions of his regular workmen only. And, being neither pressed for time nor labourers, his harvest would have been finished at a less expense, and his grain secured very probably in a much better condition." Need we confirmation of the truth of both these cases? I can give it. What was hypothesis, is now positive fact. Thus I can point out a farm, within a hundred miles of this place, upon which full three-fourths of all the crops were injured, during last harvest, owing to the reasons I have before stated, and another immediately adjacent to the former, upon which not a single grain was destroyed or discoloured. And this contrast was solely owing to the different use which was made of the fine weather at the beginning of harvest. An extract from a letter written to a friend in America at the end of harvest will explain this.* I then said, "the harvest is now (1st October) over in this part of the country, and I am happy in being able to say that it has been a favourable one to those who were stirring as they ought to be. A fortnight of rain, which has only enabled the late farmers to secure their crops a few days ago, has injured some little wheat, and much barley and oats. And had I a season to point out to corroborate my former remarks on the value of the time we gain by beginning our wheat harvest early, I could not find one that would do it so well as the present one, nor could I find a better illustration of "the better chance of securing the crop, &c." (which I stated was given us by cutting early), than is afforded in this immediate neighbourhood. Thus, on a certain farm, the wheat, which was rather backward, was cut in a raw state, the first result of which was, that it was safely housed before the wheat on some farms in the vicinity was reaped. But this was only the beginning of the end (to use a Gallicism). The wheat cutting being over early, the barley and oats were cut down, and consequently secured, in a much shorter time than they would if the wheat had been left to get ripe; in fact, the whole of the "white corn" was secured in fine condition before the rainy weather began; while, upon many lands where the corn was in an equally forward condition, *some wheat and much of the spring corn has been damaged.* Such would have been the case in the above instance, if the fine weather at the beginning of harvest had not been made use of.

Such, then, is the value of even a short fortnight. In a climate like this, if we do not "seize the moments as they fly," we must pay for our irresolution. If we take time by the forelock when the weather is propitious, we secure to ourselves advantages, the value of which no farmer can fail to appreciate, and should it be unfavourable, we can wait till the sun does shine. In the other case, however, if we neglect to work while it is day, the night comes on; if we miss the sunshine, we have to work in the shower; for we have then no alternative—no *dernier resort*, but must take the season as it chances to come.

It was my intention to have added to my own experiment the testimony of several gentlemen from whom I have received statements supplying practical corroborations of these views and opinions. Neither time nor space will, however, permit me to detail the particulars of one-half of those which have been afforded me by friends in Yorkshire, much less of those which I have received from other counties, and from the United States and British America. I have, therefore, only to express my obligations to these gentlemen for their prompt corroboration. To those, both abroad and at home, whose evidence has already been given to the public through the press, I am especially indebted. One testimony, however, I shall be excused in offering; for coming, as it does, not from an individual but from a body of farmers— and that body organised for the especial consideration of questions on agricultural science—it contains the sum and substance of all that can be offered.

Thus, at the fourth meeting for 1841 of the Leominster Farmers' Club, "the proper time of reaping wheat" was taken into consideration, when it was resolved—"That the corn should be in a raw state, or when the straw, which at a distance may appear green, but when closely examined is found to be approximating to yellow, and the grain itself, when separated, is soft and pulpy, but not in a milky state."

And that the advantages of this method are—

"1st, That a *greater weight* of corn is afforded, and that it is of a *very superior quality*.

"2nd, That the straw contains *more nutritive* matter.

"3rd, That there is a *better chance* of securing the crop, and a saving in doing so." (*Vide* Farmer's Mag., July, 1842.)

Let me here observe, that the above resolution is not merely *in accordance* with my published opinion, but is stated nearly in the *exact words* I used (*Vide* Quar. Journ. of Agric., June, 1841, p. 25); while the advantages assigned to the practice of early reaping are the *very same that I* have urged and now contend for. It is impossible that I can supply any stronger corroboration than this. A jury of practical men—men whose every-day occupation has supplied them with the data from which to reason—have sat in judgment on the question, and the decision which they give is in accordance with my own.

Any further testimony would be useless. The inquiring mind can, from what has been stated, draw its own conclusions; while to the "Goodenoughs" (to use Miss Edgworth's nomenclature) of the agricultural world, everything which has been said, or can be said, if it should militate against their preconceived notions, is but *brutum fulmen—vox et preterea nihil.*

Now, it is an old saying, which poets have sung and philosophers proclaimed for ages, that "experience teaches;" but I am afraid that it has seldom been considered that it sometimes teaches evil as well as good. It allows error sometimes to flourish till truth cannot gain root; for if he who has travelled the road for some time misses the nearest way, it is seldom, indeed, that he will permit another to point it out.

An amusing illustration of the truth of this occurred to a friend of mine a few weeks ago. Conversing in a public room upon the subject of early reaping wheat, a representative of the class I have alluded to above (one of those in whose minds that which they *ought to know* is so confounded with what they do know, that that which appears new to them they consider cannot be true), took up the cudgels against my friend, and declared that "he would never believe such nonsense; he had been a farmer before I was born, and, as he always had allowed his wheat to become ripe, nobody should make him do otherwise."

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* Vide "The Cultivator," Albany, U. S., vol. VIII., No. 12.

Such strong resolves, based upon such weighty reasons, my poor friend could not hope to controvert—he was therefore silent. His opponent, however, was one of those who endeavour to make the most of a victory (?)—one who, as Horace says, "Fœnum habet in cornu," &c.; he therefore followed up his declaration by an *ad captandum* appeal—adding that "the very idea was unnatural, and was as nonsensical as to say that *green gooseberries were better than ripe ones.*" To this my friend, who was not disposed to let fallacious sophistry pass current for argument, though he had not replied to dogmatic assertion, begged to observe, that he could not question the experience of the gentleman, or inquire the use he had made of it; that was perfectly evident! If, however, forty seed-times and forty harvests had taught him *much*, there were some things which he had *failed to remember*, viz:—

1st, That fruit was not grain, and therefore there was no analogy between the gooseberry and wheat—whence the fact of one being better for use in a certain condition, was no reason that the other should require to be in that self-same state.

2nd, That, even admitting the analogy, the argument was against him, for gooseberries were actually better for many uses unripe than ripe—were in fact seldom allowed to be dead ripe; it was, consequently, perfectly consistent that wheat should be better for flour when taken raw than when ripe.

3rd, That, even admitting both his assumptions,—allowing, for sake of argument, that there was a clear analogy between the gooseberry and grain, and that the former was best for all uses when perfectly ripe—the argument was still more against him; for, as it was a fact which all writers on vegetable physiology allowed, that if he would reap when it was in a condition most nearly assimilated to ripe fruit, that time would be when the ear was green, since it then contained the greatest proportion of sugar. This was explained by the circumstance that the process of ripening produced the very opposite results in the two. Thus, during ripening, the acid in the gooseberry became converted into sugar; while in wheat, during the same process, the sugar which it contained when in bloom gradually changed into starch. It was obvious, therefore, if we would have them both in the same condition, it would be when wheat was green, as they both contained at that time the most sugar.

4th, That, setting aside all analagous evidence—setting aside the fact that hay, straw, turnips, carrots, the cabbage, the artichoke, &c., lose their soluble and nutritive matter, and became tough and dry if left uncut, after they have reached a certain size—direct evidence had been produced that wheat actually deteriorated in value by being left uncut till thoroughly ripe—which direct evidence the gentleman could not controvert; for, by his own assertion, he never had and never would reap his wheat before it was ripe. He had never tested the subject by trial; his experience, therefore, could never refute the experience of another.

Lastly, He begged to remind him that the best interpretation of the word "ripe" was "fitness," and the best farmer was he who reaped his produce as soon as it was fit for use, and who considered it fit when it made the most money in the market.

To this the man of experience (?) rejoined, that he might say what he liked and quote whom he liked, men could write what they liked, and he should believe what he liked! My friend now begged that he would not suppose that he intended to interfere with that determination—it was perfectly consistent with his argument and experience; and he trusted that he would be equally consistent in practice, and eat his asparagus when it was ripe!

It will, perhaps, be said that these cases are few and far between. I hope they are so. This, however, I do know, that he who endeavours to alter or amend in the least the practice which common custom sanctions, will meet with such cases. But this is no very heavy blow. If a few oppose blindly, many are ready to receive with open ears, while this very opposition, though backed by half a century of one-sided experience, does the cause some service. It teaches us to reflect, that if experience does not make all men physicians, it is necessary to keep a look-out lest it make us fools.

I have now but one observation to make on the subject, and though it comes last it is far from being least worthy of attention. It is, that however little, or however much, we may think of the gain to ourselves accruing from the adoption of any system, it is our duty, as members of society, to avail ourselves of every means of applying the resources the Almighty has given to the use of his creatures, and of developing still further those resources for the benefit of the community at large.

When, then, we consider that there are in England and Scotland about 4,000,000 acres of wheat grown annually, producing 12,000,000 quarters of grain, of which three-fourths are allowed to become too ripe—when we consider that, by cutting this sooner, we should produce an increase of 15 1 7th per cent. of flour, and realize an increased value of 7s. 6¼d. upon each quarter produced; and that we should produce food for 1,362,857 persons over and above what we now produce, and an extra annual income of 512,491*l.*; and when we consider that this income would be so much added to the wealth of the country, that it is equal to the proceeds (at 3 per cent.) of an estate worth 17,083,033*l.*, and that the increase of our population demands an increased supply of food—I would ask, what is our duty in this case? The answer I leave.

CURE FOR THE NEW DISTEMPER IN CATTLE.—We (*Westmeath Guardian*) have been favoured with the following cure for the new distemper in cattle, by the kindness of W. A. Reilly, Esq., of Bellmont, and we doubt not but its efficacy will prove of vast advantage to the graziers throughout the county, who are at present suffering the loss of their stock:—"Bleed in the off side of the neck from four to eight quarts, according to the age and strength: keep stirring the blood in a vessel, and give two quarts of it with 1 lb. of common salt for a physic. Next day bleed on the opposite side. If the animal is not better the third day, give one scruple of calomel, one scruple of Tartar emetic, mixed into a ball of any material, every three hours till the gum becomes red, and salivation sets in. After using the mercury, the following day give one pint of rape oil, ¼ lb. of Epsom salts, ¼ oz. of nitre, which may be repeated if necessary a few days afterwards. If swelling of the body occurs, give half an ounce of nitre, dissolved in luke warm water. Keep the animal in a dry airy place, and give gruel and bran water."

ON GUANO.

Sir,—Calling your attention to the parcel of grass herewith, I beg to state that having, two months since, mown a field by no means remarkable for good herbage, I desired five yards might be sown with a larger quantity of guano than has usually been recommended, little expecting that my man would use 25lbs. The consequence was, as I anticipated—the grass turned brown, except round the edges, where a most rapid growth took place of an extremely dark green. After each heavy rain, tufts of grass, which appeared dead, have revived to the extent of two-thirds of the whole; and I have no doubt the remainder will recover in the spring, if not before. The samples are the produce of one yard each of the manured and unmanured parts of the field, and weigh, the one 3lb. and the other 7lb.

From other experiments which I have tried, and which have been mentioned te me by others, I am disposed to think that from three to four cwt. per acre will give the most profitable results when confined to a single crop; but why should it not be applied in larger quantities, with a view to the usual succession? It is not like nitrate, merely a stimulant, but it remains in the ground, and I understand, in some parts of Peru, three crops—Indian corn, potatoes, and wheat—are taken off without any additional quantity being used. Can any of your readers inform me whether it has ever been applied in this way here.

I am, Sir, your obedient servant,
Liverpool, September 8th, 1842. W. D.

CONTRADICTORY STATEMENTS ON THE USE AND EFFECTS OF LIME AS A MANURE.

Sir,—On perusing the "Farmer's Magazine" for the present month, I find the first article is an essay by Dr. Madden on "The Application of the Principles of Vegetable Physiology and Chemistry to Agriculture," who under the head of "Liming" says —"Lime greatly hastens the decomposition of the organic matter in the soil;" and goes on to say that "therefore, however great the benefits of liming may be, it really exhausts the soil, and hence should not be *repeated* without great caution." In the same Magazine is an extract from "Hornby on Lime—its uses and abuses;" in which it is stated, that "when lime in its caustic state is applied to vegetable or animal substances, either in the way of compost or upon the soil, so far from affording nutriment to such vegetable or animal substances as may be present, *it speedily effects a decomposition of these bodies* by its powerful tendency to unite with some one or other of their various constituent parts: the living principle is thus expelled, and the elementary matters of which those bodies consisted become readily yielded, and form the basis of valuable sustenance to the future plant."

Now, in the article on "Agricultural Chemistry" (from the "Lancaster Guardian"), inserted in the August number of your valuable periodical, I find the author, in treating of lime as a manure, distinctly stating, backed by the opinion and experiments of Dr. John Davy, that "it is *not* by communicating solubility to humus—it is *not by forwarding the decomposition of organic matters,* that lime benefits the soil, and promotes vegetation;" and he recommends its "*frequent,* sparing, and *well-timed* application, to insure the most certain return for the capital employed." I perfectly agree with the writer of the article on agricultural chemistry, that the "well-timed" application of lime, or any other manure, must ensure a certain return for the capital invested; but how is it possible for the farmer, for whose instruction the above quotations were penned, to reconcile the opposite conclusions arrived at by the learned writers in question? And how can Doctor Madden wonder that the practical agriculturist, when such very different opinions are entertained by scientific men, should fall into the very "grievous error" of undervaluing and not following up the suggestions of the theorist, and that there should be found some men hardy enough to designate such "facts" as "foolish prattling?" I am of opinion that eight or ten experimental farms, placed on different soils and situations throughout the kingdom, with an agricultural school attached to each establishment for the instruction of youth intended for farmers, would tend more to the advancement of agriculture than all the theoretical writings of scientific men unacquainted with the practice of farming.—I remain, Sir, your obedient servant, A Practical Farmer.

East Somerset, September 11, 1842.

ON MANURE TANKS.

Sir,—In No. 3 of the "Farmer's Magazine," a "South Sea Savage" gives an answer to some queries of a former correspondent, in which he recommends the placing of a tank in the fold-yard, which I consider a very improper place, as thereby it will be an utter impossibility to prevent the water collecting with the pure liquid, and rendering it so very poor that it will scarcely be worth the trouble of cartage.

As an improvement on this, I would say, let the tank be made in the cow-house, which will prevent any other than the pure liquid gaining admittance; or if placed in the yard at all, the drain to conduct the liquid should be so formed as to prevent any water from getting thereto, which can only be done by collecting that urine which is under cover, as that in an open yard will always be liable to take the water also.

And as a further improvement to the tank in the cow-house, I would have either a portable or a fixed pump, to pump the liquid into a convenient vessel placed in a cart with a perforated tin sieve attached to it, similar to those used for watering streets, and as a ready way of spreading it is obtained at a small expense. Having been often grieved at seeing the extravagant waste of such a precious liquid, I feel backward to say anything about an overflow-pipe. Yet, fearing some idle farmer might neglect attending to it in time, I would advise a pipe to be conducted to the kitchen fire, so as to extinguish it when the tank is full. This messenger entering the house will be very likely to send out another to remind the farmer of his duty, and by this means a recurrence of the same misfortune will be prevented, as the wife will no doubt keep a sharp look out, and give timely notice on another occasion.

By the insertion of the above remarks in your valuable publication, you will oblige,

Yours, A Yorkshire Farmer.

REMARKS ON THE PROCEEDINGS OF THE RICHMOND AGRICULTURAL SOCIETY.

SEPTEMBER 9.

(FROM THE MARK LANE EXPRESS.)

We inserted last week a list of the prizes awarded at the meeting of the Richmond Agricultural Society, stating at the same time, that in consequence of the meeting having been held late in the week, we were unable to give a full report of the proceedings, but should do so on this day. We now redeem our pledge, by laying before our readers a very complete report, extracted from the *York Herald*. We stated a short time since, that the committee of the Richmond society, in furtherance of a suggestion made we believe by the spirited President of the society, R. M. Jaques, Esq., of Easby, with a view to introduce into the neighbourhood agricultural implements of an improved character, had determined upon devoting a portion of their funds, to the amount of 100*l.*, to the purchase of such implements as were reputed to be good, and that a considerable number of implements had been purchased for the society at the meeting of the Royal Agricultural Society of England at Bristol. In order to afford a more satisfactory test of the respective merits of implements than can be obtained by the hurried trials at agricultural exhibitions, Mr. Jaques offered the use of his farm at Broken Brea for a week, to be devoted to the trial of implements—under the direction of the inventors or exhibitors, who might thus have the opportunity of explaining their peculiar advantages, and those interested in their use have an opportunity of estimating their merits. In furtherance of this object, Mr. Jaques invited the attendance of the several manufacturers and exhibitors whose implements had been selected for the use of the society, and having been liberally supplied by the farmers in the neighbourhood with such additional horses and men as were required for the occasion, the trials commenced on Wednesday morning with scarifiers, ploughs, rollers, and thrashing and winnowing machines. The ploughs were some of those most approved for general use, made by local makers, and others from Ransome, Lord Ducie, Perry, and Barrett of Reading, and Barrett of Hull. As regards a trial of the comparative merits of ploughs, we believe that even could the prejudice of the ploughman in favour of the implement which he is in the habit of using be overcome, no fair trial could be made unless a ploughman accustomed to each particular sort of plough to be tried, should manage it during such a trial. We are inclined to think that this impediment was seriously felt on the occasion of the trial in question, the men in some instances being evidently unacquainted with the proper mode of using some of the ploughs brought from a distance, and which rendered the attempt to form a correct comparative estimate of their merits impracticable. The scarifiers were those known as Biddell's scarifier, and the Uley cultivator; the management of the former was under the direction of Mr. A. Ransome, and the latter of Mr. Clyburn—the respective manufacturers.

These implements were at work during the principal part of the day on Wednesday; but as it was intended to devote an entire day to a trial of them under the superintendance of competent judges, no tests were applied; the working of both appeared very satisfactory, and superior to that of any of the implements in common use in the neighbourhood.

The thrashing machine made by Crosskill, of Beverley, worked by four horses, thrashed out a stack of oats, which was afterwards dressed by the winnowing machine. The work was well executed, and we regret that we are unable to give the quantity thrashed, and the time occupied.

The next day being very wet, the trial of outdoor implements was impracticable; the attention of the parties present was therefore devoted to such implements as could be tried under cover. The implements selected were Lord Ducie's patent hand chaff engine, and a chaff engine by Crosskill, worked by horse power.

Lord Ducie's chaff engine was worked by two men, who were relieved at intervals of fifteen minutes by two others; it was fed by one man, who placed the straw in the box, and a second was engaged in preparing it for him. It having been agreed that the straw should be cut into quarter inch chaff, 3½ cwt. of oat sheaves were weighed, and the men began their work, which they accomplished in about eighty minutes. The chaff measured about 43 bushels, and the sample produced was excellent. As regards the men, the labour appeared to be fair regular work, and such as, if so relieved alternately, they would not have difficulty in keeping up at the same rate throughout the day.

Crosskill's horse machine was next tried, with the same weight of oat sheaves, and was attached to the horse power of his thrashing machine. The work was begun with two horses, but being unaccustomed to the work, their pace was unsteady and jerking, which occasioned the breaking of one of the knives, of which there were five placed upon a barrel. The machine was then worked by one horse, and the quantity was cut in about twenty-three minutes. Taking into account the want of one of the knives, which allowed such portion of the straw as was missed by the barrel travelling without cutting over one-fifth of the space, and which left one-fourth of the chaff one-half inch instead of one-quarter inch long, the sample was considered good. The horse performed the work with apparent ease, but it was thought that if the pace could have been confined to three revolutions per minute instead of nearly five, at which rate he travelled, the machine would have worked to more advantage.

Some other small hand engines were tried, but their performance was less satisfactory, and the main interest was attracted to the two mentioned above.

Friday was a busy day, and the proceedings being very interesting, attracted a great number of spectators. On that day the local ploughing match and reaping match, (the reports of which we have already published), took place; but our attention having been more particularly directed to the trials of implements, we watched with much interest the progress of a series of trials and experiments with Biddell's Scarifier and Lord Ducie's Cultivator, before alluded to. Three gentlemen having been selected as judges, the manufacturers managed their respective implements, which were both fixed to work at the depth of 3½ inches.

The breadth covered by Lord Ducie's cultivator with five tines, having two inch points, was found to be two feet eleven inches, measured from the outside of the tines; that of Biddell's scarifier with nine tines and one inch chisel points, measured in the same manner, was 5 feet 6½ inches; the instruments were set to work, and after many trials of both, the draught of each was tested for two lengths of the field, both up hill and down, and was found to average as well as we could collect, for the Uley cultivator, covering 2 feet 11 inches, 6 cwt. 0 qrs. 7lb.; for the Biddell's scarifier, covering 5 feet 6½ inches, 6 cwt.

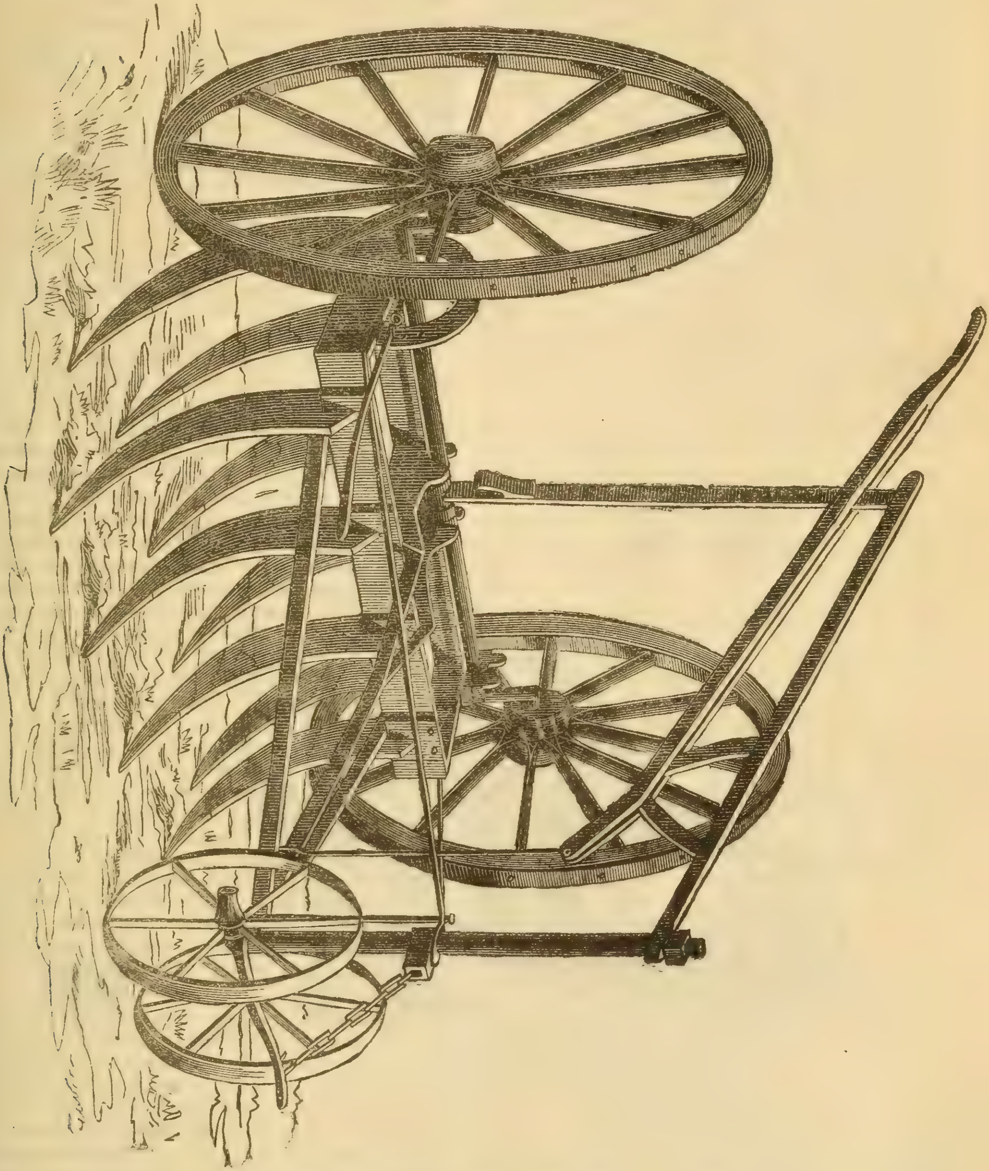
On examining the state of the land it was found that the earth was more thoroughly stirred by the cultivator, which accounted for its greater comparative draught; and it was stated by Mr. Clyburn that the improvement of using wider teeth and points was adopted, in order to produce this thorough stirring. Mr. Ransome stated, in reference to the construction and working of Biddell's Scarifier, that in order to produce perfect tillage by the Scarifier, it would, in all cases, and in his opinion with either implement, be requisite that the soil should be stirred a second time, and that an interval would be required between each stirring for the action of the atmosphere upon the land, and for the use of the harrow; and hence that it was more desirable to cover a greater breadth of land at as little cost of power as possible, as the perfect stirring of the land would be effected by the second operation, when there would be less resistance for the implements, and that if two-inch points were a desideratum the Scarifier could be used with them on the second stirring, when the resistance to be overcome was not so great; but that on very hard land, when even ploughing could only be performed with great difficulty, the chisel points would penetrate readily, whilst broader points could only be used to disadvantage, if they could be used at all.

The implements were then tried at 2½ inches depth, and the comparative draught was found to be very much the same as in the first trial. Both implements were then tried with the broad hoes working upon the unbroken land at a shallow depth, when it appeared that the Uley Cultivator worked to greater advantage, thoroughly cutting the land without clogging. The broad hoes attached to the Biddell's scarifier were not suited for the purpose, as they did not fit the tines properly; the hoes being new also, and not worn smooth, the earth when working at a shallow depth adhered to them, and rendered the operation imperfect; but when used at a greater depth, and on the land which had previously been broken by the points, it worked better.

The implements were then taken to another part of the farm, where the land was of a looser texture and more gravelly, and fixed to work at the same depth as at first; but it was found impossible to test the draught satisfactorily, the land being exceedingly foul with weeds and long stubble. The whole of the day, from ten o'clock in the forenoon until past six in the evening, was expended in repeated trials of these implements, and it has never fallen to our lot to witness a more interesting or indeed important experiment. The arguments of the contending parties were conducted with perfect fairness, courtesy, and temper. The attention of the judges to the wishes of the exhibitors in affording them facilities for the working of their respective implements in any way in which either wished them tried, was such as could leave no room for complaint that a perfect trial had not been afforded them; whilst to those who witnessed the trial a new view was opened of the mode of carrying out an agricultural operation by means of implements, by the use of which the more expensive process of the plough may in many instances be dispensed with.

It is daily becoming more apparent that not only must increased attention be given to the cultivation of the soil, but also that economy in cultivation, by the use of improved implements and machinery, must be had recourse to if the British farmer expects to maintain a successful competition with the foreigner, to whom the markets of this country are now partially, and for anything we know, may in the very next session of Parliament be entirely opened. The farmers of England must prepare for the worst, and they cannot better prepare themselves than by adopting every improvement either in implements or in cultivation, which shall have been accurately tested and clearly *ascertained* to be an *improvement*. The ingenuity and the cupidity of man is in no way more exercised than in holding out extraordinary advantages to the farmer in the shape of new or improved implements, new or improved variety of seeds, and cheap artificial manures. Let not the failure of one or more of these new things, of whatever description, offered to the cultivator of the soil, prejudice him against the trial of others; let it only induce him to exercise a discretion in making his experiments upon a small scale, but with accuracy and precision. The Richmond Society, by the well-directed efforts of an able committee of management, aided by the liberal conduct and zealous attention given by the President, set an example which will, we trust, be followed by other local societies. The cost of any new or improved implement, if paid for out of the funds of the society, will fall very lightly upon the individual members, even though it should be found valueless, whilst each member in his turn will have an opportunity of trying it. For having set such an example we hold that the Richmond Society is indebted to the gratitude of all the other local societies; nay further—if, as Mr. Jaques stated to be his intention, he shall make arrangements for the trial of various implements next year for a week or ten days in succession, previous to the meeting of the society, we contend that the makers of implements will be as much indebted to him and to the society as the farmers themselves must be. The implement-makers ought, and we have no doubt will, send their implements for the use of this or any other society established upon the same principle, *gratis*. How, we would ask, could the money price of an implement which the improver or inventor knows to be *really good and useful*, be better applied than in placing that implement in the hands of fifty, or perhaps a hundred intelligent practical farmers? Such a course adopted in half a dozen societies would ensure the introduction of an implement throughout the kingdom.

BIDDELL'S SCARIFIER.



General Purposes to which the Scarifier may be advantageously applied.

To clean wheat, bean, and pea stubbles directly after harvest.

To break up such parts of clover layers as may have failed in the plant, and to break up land after green crops in May or June in preparation for turnips, coleworts, &c.; thus accomplishing fine and deep tillage, without bringing fresh earth to the surface-land, in preparation for barley and oats.

The Advantages of this Implement are—

Saving in tillage, of half the labour, both manual and horse, over the ordinary method of cleaning land.

Saving of Time.—Lands may be broken and stirred with this implement in much less time than with the plough.

Improved Cultivation.—The operation of this scarifier is much more effective for spring crops on strong lands than ploughing, as it occasions less treading by horses, produces more mould, and allows the moisture to be more advantageously retained, and the seed will be deposited in the soil which has been exposed to the winter frosts.

Less Harrowing is required, as the land is broken up and left much finer than after the plough.

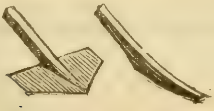
The Couch Grass (if any) is brought to the surface without breaking it.

The land is left by this implement in a state to be immediately harrowed, which may be done in time to break the clods before they become too hard.

In all cases where it is desirable to give tillage to the land without turning down the surface, this implement may be used with great advantage.

DIRECTIONS FOR USING THE SCARIFIER.

In using the scarifier, attention should be paid to set it level, and the depth of scarifying may be varied from one to ten inches, which is done by means of the two levers.



When the land is very hard, and required to be cut clean, first use the chisel points, and then follow with the wide hoes.

The chisel points only should be used on clover leys; the roots of the clover being too tough for the hoes, and are not required to be cut up.

The horses should be kept in a direct line, and *the implement not suffered to turn without taking the fore part out of the ground by means of the long lever.* Particular attention should be paid to this; for although the slanting direction in which the tines are set will bear the draught required while the horses go straight forward, they cannot stand against the twist, if the scarifier be turned round before the front tines are taken out of their work. It is also needful to observe, that the draught iron from the fore wheels, upon which the whippletrees hang, should be suspended by the draught chain higher than where the three draught irons (when in work) go upon the upright part of the fore axletree; otherwise, this may bend or give way.

The wheels, on either side, may be made to go higher or lower by shifting the coupling irons, where holes are made for that purpose, where one wheel has to work in the furrow; which may be the case when a stetch is scarified by going on one side of it, and coming back on the other.

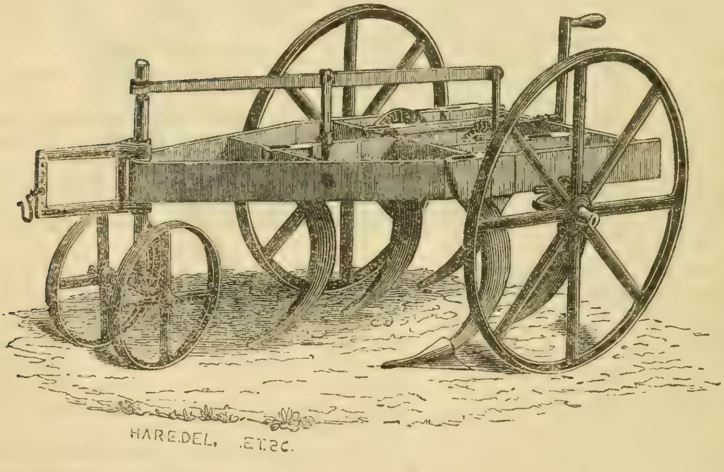
It is essential to have whippletrees adapted to the implement; if otherwise, it will fail to scarify up the foot-marks of the horses. In this respect the largest size scarifier has decided advantage when three horses are used, and No. 3 when two horses only are applied.

On land in course of preparation, three horses only will be required, driven abreast.

On land immediately after the crop, four horses are commonly required.

These remarks as to horses, apply to the large implement with nine tines.

ULEY CULTIVATOR, OR DUCIE'S DRAG.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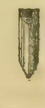

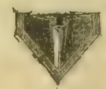

Some of its Advantages.

First.—From the peculiar arrangement of the tines, it is not liable to clog.

Second.—It is easily raised and lowered.

Third.—It will turn round in a very small space.

Fourth.—It is put together in such a manner, that if any of its parts should break, they can be supplied on application at Uley; they are sure to fit, and may be put together by the ploughman.

Some of its Uses.

The small points, or what are called "*Grubbers,*" are used to grub up fallow or turnip land that has been eaten off by sheep, and in many cases, supersedes the plough, as it brings all the weeds to the top. The broad points, or what are termed "*Scarifiers,*" are used for paring stubble or filthy land. There is also a set of Breast-plough Shares, for paring lea or seed lands, instead of using the common Breast-plough: those are charged extra, and never sent unless ordered.

RICHMOND AGRICULTURAL ASSOCIATION.

The annual meeting of this association took place on Saturday, Sept. 9, (the market day), when, from the great exertions of its promoters to forward the interests of agriculture to a larger extent than has hitherto been attempted by any similar society, a great number of persons attended from all parts of Yorkshire, and also from other counties.

IMPLEMENTS PURCHASED BY THE SOCIETY.

Biddell's scarifier and Biddell's extirpating harrow, both manufactured by the Messrs. Ransome, of Ipswich; Earl Ducie's cultivator; Irving's patent drill, an ingenious and simple drill, but which was not worked; three ploughs, made by the Messrs. Ransome—the novelty of these ploughs consisted in their having hollow iron beams, a new mode of adjusting the coulters, and an ingenious contrivance for elevating or depressing the point of the share; Grant's drag rake, a plough made by Messrs. Perry, Barratt, and Exall, of Reading; a plough made by Prosser, of Bristol; Wedlake's cake-crusher, and a machine for crushing cake either for cattle or manure. Two of Dean's improved corn crushers, which appear to be simple, portable, and efficient, and did their work well; a patent portable hand flour mill, made by Mr. Dean; another plough; Earl Ducie's patent hand straw cutter; Smyth's twelve coulter corn, seed, and manure drill; and a plough by Messrs. Mack and Butler, of Greenwich, which was highly spoken of.

THE SHOW GROUND.

The exhibition of stock and implements took place in a field near the town, belonging to Mr. Smurthwaite, spirit merchant. The ground was opened at ten o'clock, and was soon afterwards visited by a numerous and respectable company. It is beautifully situated on the side of a hill, and the fine view which it commands of the town, and of the majestic and imposing ruins of the castle, with its broken arches and ivy-mantled towers, rivetted the attention and excited the admiration of the numerous strangers present. The other parts of the landscape also which surrounded the show-ground deserve a passing notice, especially the north-west, which possesses much of the grandeur of Highland scenery. At the bottom of the ground a large stone temple is situated, evidently having been erected many years, in one of the upper rooms of which refreshment was provided for the judges and the committee. This temple was visited by a great number of persons during the day, who ascended its winding stairs for the purpose of enjoying the beautiful prospect from the roof.

The number of entries of stock of all kinds was large, and of a quality which elicited the unqualified praise of the judges. The show of short-horns was particularly numerous, and of a superior description. Two short-horned steers, the property of Mr. Fryer, of Catterick Bridge, were shown, the weight of one of them being 130st. 7lb.; and the other 127st. 7lb. A three years old heifer, the property of the same gentleman, weighed 126 stones.

IMPLEMENTS EXHIBITED.

The following is a complete list of the implements exhibited at this anniversary:—

A seven-row corn-drill, with box for manure, was exhibited by Mr. Teesdale, of Bedale.

A two row bone-dust turnip drill, with self-acting coulters.

An improved manure turnip and corn drill, with self-regulating coulters, for distributing farm-yard manure and compost in rows or on the ridge, was exhibited by Mr. Robinson, of Ripon, and worked.

Mr. Crosskill, of Beverley, exhibited four horse portable thrashing machines; a patent clod crusher roller; a one-horse power straw cutter, to work by the horse part of the portable thrashing machine, and capable of cutting two hundred bushels per hour; and a dressing machine, to which was awarded the silver medal of the Highland Society, at Berwick, in 1841. He also exhibited a dressing-machine, similar to that to which was awarded a prize at Bristol, in 1842; one of Ransome's small hand straw-cutters; one Gardner's turnip cutter; two turnip cutters, with knives on a disc for cutting for sheep or beasts; one cake crusher, one smaller ditto, and a liquid manure pump on Shalder's patent principle.

Crosskill's clod crusher, which is too well known to call for particular observation, attracted much attention.

There were some of Warden's patent van arms, the workmanship of which appeared excellent, exhibited by Mr. Dean, of Birmingham.

Mr. Thompson exhibited two ploughs made by Barrett and Ashton of Hull; a set of strong harrows, and a set of seed harrows Armitage's patent, by the same makers. There were also two hand rakes, not in general use in this part of the county, exhibited by Mr. Thompson.

A subsoil plough, to be used with or without mould-board, made by Stainbank, was exhibited by Mr. Allison.

A single and double mould-board plough, with two wheels at the head, for deep ploughing, made by Mr. Scurragh, of Crakehall, was exhibited by himself.

A plough with wheel behind, and two Scotch carts, one with patent boxes and caps to cover the linch pins, made by Mr. Coates, were exhibited by him.

THE JUDGES.

The following gentlemen acted as Judges at this exhibition:—

For Cattle and Pigs.—Mr. Wright, of Romely, near Chesterfield, and Mr. Parkinson, of Leyfields, Retford.

For Sheep and Horses.—Mr. Grey, of Dilston, and Mr. Wood, of Kimblesworth.

For Shearing and Ploughing.—Mr. Wood and Mr. Wright.

For Turnips.—Mr. Parkinson.

THE DINNER.

At three o'clock upwards of one hundred gentlemen sat down to a sumptuous dinner, in the large ball-room, at the King's Head Inn. R. M. Jaques, Esq., the president of the association, occupied the Chair. John Booth, Esq., and Thomas Charge, Esq., acted as vice-presidents.

Amongst the gentlemen present were the following members of the Committee of Management:— Messrs. Lister, Booth, Bell, Severs, Charge, Outhwaite, Dale, Lax, and Capt. Harland; also, the Rev. E. W. Morley, Rev. W. F. Wharton, Capt. Morley, Capt. Worsley, Capt. Hogg, Major Healey, the Right Worshipful the Mayor of Richmond, the Town Clerk of Richmond; Messrs. W. Mauleverer, P. C. Maxwell, J. C. Hincks, — Hincks, John Hutton, W. Shaw, (of London), Bradley, Ray, Wetherell, (of Durham), Leven, Carter, Bell, Other, Turner, Fisher, Smurthwaite, Barker, Metcalfe, Eales, W. Harrison, Ridley, Tomlins, Powles, Ransome, Ryland, Clyburn, Crosskill, Hicks, Rawlings, Wray, Richardson, Todd, Hutchinson, John Charge, Brown, Allen, &c., &c.

Grace was said by the Rev. E. W. Morley, and after dinner he also returned thanks. The cloth having been removed,

The Chairman proposed, in succession, the usual loyal toasts.—"The Queen, and a happy return again to her palace at Windsor," "Prince Albert, and Albert Prince of Wales," and "The Queen Dowager, and the rest of the Royal Family," which were all drunk with applause.

The Chairman proposed "Success to the Richmond Agricultural Association, and everything connected with it." He did not mean on that occasion to dilate much on the utility of agricultural associations, for every town in the neighbourhood afforded satisfactory evidence that they were useful to the community *(Cheers)*. The Richmond association had not been long established, and when he looked around him, and saw there were agricultural associations of much shorter existence, he considered this as the best proof that such associations were doing good *(Applause)*. He was sure every body would bear him out that the time had come when all who are interested in the pursuit of agriculture must take pains to be successful, or they will be left far behind *(Applause.)* The man who attends to the improvements which are daily made in the science of agriculture, and profits by the experience of others, will assuredly reap more advantage than he who is slow in his proceedings, and inattentive to what is passing around him: the first will make a fortune, while the other will lose one. The man who first starts in the race of improvement is the man most likely to bring his exertions to a successful termination. There are two classes in agriculture—the proprietors and the occupiers. It is the bounden duty of the proprietors to set an example, and unless they do, they cannot expect the occupiers to do so *(Applause)*. He was just reminded of a remark made by Lord Spencer at York, relative to the different conduct pursued by two military officers, which amused him very much. The one was accustomed to say go along, and the other come along. They might judge which had the most influence *(Applause)*. As far as the interests of that society was concerned, no person was more willing to aid them than he was (*Applause*). The stock exhibited that day in point of numbers had been equal to any show which they had previously had, and in point of merit perhaps decidedly superior. So far as the stock in the second class was concerned, where the competition was among the tenant farmers, there had been a material improvement; and if that class of farmers would make up their minds to compete still more, it would be attended with very advantageous results to them. He had heard individuals say if they had had such an animal at York they would have won. Why did they not go? It was a feeling of petty jealousy, or false delicacy, perhaps, which prevented them from taking their stock to cattle shows, and he hoped that this feeling would soon be done away with. The Richmond field, however, had been well filled that day, and the society presented a feature which had never been seen in any agricultural association before—he alluded to the exhibition of agricultural implements—*(Hear)*—not merely an exhibition of implements in the field that day, but there were parties present who had been labouring almost the whole of the week to TEST THE MERITS OF THESE IMPLEMENTS. The result of the experiments he trusted would appear in print, either in the magazine of the Royal English Agricultural Society, if they were thought worthy, or amongst the proceedings of the Yorkshire Society. Yesterday, the premiums for ploughing and shearing were awarded; and to show the importance which he attached to the introduction either of new implements, or of implements superior to those at present in use among them, he would state what he himself proposed to do. Mr. Ransome, of Ipswich, was present, having brought several ploughs, the merits of which they had tested on his (the chairman's) farm at Broken Brea. And to encourage Mr. Ransome to come again—and to encourage the introduction of better implements than they at present used—he proposed to pay Mr. R.'s expenses of bringing a plough, a pair of horses, and ploughman, to compete for the ploughing premium next year. If Mr. Ransome should win, he (the chairman) would pay his expenses. If Mr. Ransome was second, he (the chairman) should pay half; but if Mr. Ransome lost, then he would bear his own expenses *(Cheers)*. The chairman concluded with again proposing "Success to the Richmond Agricultural Association." (Three times three.)

Major Healy proposed the health of the worthy President of the association, and many thanks to him for his great exertions in promoting its prosperity, and for having been the means of bringing to their notice that day the splendid show of implements of husbandry which they had seen—*(Cheers)*.

The Chairman, after briefly returning thanks, proposed "Success to Agriculture, Trade, and Commerce." It might be considered that he should explain the reason of this toast being placed so early on the official list; but when he stated that there were parties in the room connected with other pursuits than those of agriculture, and who had complimented the society by attending with their implements, the propriety of placing the toast in a paramount situation on the list would be seen. (*Cheers.*) He felt indebted to those parties for bringing their implements to be exhibited; and he was satisfied, from their knowledge of mechanics, engineering, and various other matters, that the society would ultimately receive benefits from their attendance, which many farmers, prejudiced in old customs and old pursuits, little dreamt of. He had been told they were to have a plough without either beams or stilts. He had also been told that locomotive engines were invented without wheels. These things appeared strange; but if they happened to live a few years longer, they would perhaps cultivate their farms in a very different way to that adopted at present. Without further preface, he would give them "Prosperity to Agriculture, Trade, and Commerce." *(Applause.)*

Mr. Ransome, of Ipswich, said it was under feelings of no ordinary degree of embarrassment that he attempted to give utterance to the expression of his feelings at the kind manner in which the Chairman had alluded to the circumstance which had induced the early introduction of the toast to which he was called upon to respond. If anything would render the task easier of expressing his sentiments, it was having to acknowledge a toast with which his own heart, feelings, and interests went along; and what rendered the task more pleasant was, that the society, in the outset, had acknowledged its unity of interests with the other great classes which had been named. In a kingdom like ours, whose prosperity, comfort, and advantage depend not on any individual class, it was interesting to see individuals breaking down their old and early prejudices of class interests, with a desire to obtain a more liberal comprehension of that which constitutes the good of the community and the good of all. (*Cheers.*) Agriculture, in every state, in every clime, must always hold the first place. We might live without manufactures—we might live without commerce—although it would be very poor living indeed; but commerce could not live without agriculture—manufacturers could not live without food—and therefore whatever be their relative merits, agriculture must hold the first place, and not only was it the first place, but it also seemed the happiest and the best place. (*Cheers.*) The pursuits of the farmer must partake of the nature of enjoyments, without being disturbed by these petty jealousies which too often prevail among other classes. He was happy to see that a growing spirit of liberality was manifesting itself everywhere. Under the wise ordination of providence, man is always advancing towards a state of improvement; "he never is, but always to be blessed." It has been so arranged that we do not need all the world to be gentlemen: that the few can grow food for the many, leaving a large number of persons at liberty to labour for the advantage of mankind in other ways. Out of these has sprung the manufacturer, and he has, by skill, enterprize, and intelligence, arrived at a pitch of perfection which enables him to supply to persons in his own and other countries clothing which was denied a few centuries ago to monarchs. The rude Caffrarian wandering in the desert, and the Indian in his wigwam, both are possessed of some portion of British manufactures; which are also to be found in every country and clime. The manufacturer therefore has claims upon society as well as the agriculturist. The commercial part of the world has been raised up in order to be the means of exchange between the other two, by which means we receive luxuries that all the other parts of the world are enabled to produce, in exchange for the manufactures of our own land. Each of the three classes alluded to, have alike claims upon the community, and he earnestly desired that they might all flourish. And though for a time there might be what is called over production, he had no fear that the power which had brought them up to their present state, would fail them now. He desired earnestly that our commercial intercourse might increase, and be extended as widely as possible. Above all he desired that a growing feeling of cordiality might be a feature in the future conduct of the great interests that had been named, and that the jealousies which had hitherto existed with regard to classes might be done away with, each party seeing that there is no advantage which shall result for the good of one, unless it is also for the benefit of all. It was the maintenance of this happy balance that had brought England to her present prosperity, and it was upon this that her future prosperity and comfort depended. (*Applause.*)

The Chairman next proposed the health of the patrons of the association, the Duke of Leeds, the Earl of Zetland, Lord Prudoe, and Lord Beaumont. (*Cheers.*)

O. Tomlin, Esq., the Secretary, then read the list of premiums awarded.

To the Labourer in Husbandry 2*l.*, second 1*l.*; 1st, William Bennison, labourer to Mr. Jaques. This man has lived upwards of 40 years in Mr. Jaques's family, and has brought up five sons, all of whom are filling situations much above those which fall to the lot of the sons of labourers generally.

To the In-door Man-servant, 2*l.*, second 1*l.* 1st. To John Wetherell, servant to Mr. R. Deacon, Stainton; 2nd, to William Jaques, servant to Richard Booth, Esq., Warlaby.

To the In-door Female Servant, 2*l.*, second 1*l.* 1st, Ann Alton, servant to Mr. Richard Booth, Warlaby; 2nd, Ann Smith, servant to Mr. William Tenant, Newfound England

Cleanest House, with Family, 2*l.* 1st, Elizabeth Carter, wife of John Carter, Killerby, children.

Ditto without Family, 1*l.*—No entry.

Ploughing.—Class 1.

There were 21 competitors for the prizes for ploughing, and the work as a whole was very well executed.

For the best Ploughman, 5*l.*, second, 2*l.*, third, 1*l.* 1st, Thos. Harrison, servant to Mr. Johnson, Cleasby; 2nd, Geo. Robinson, hind to Mr. Trotter, Barton; 3rd, John Pearson, servant to Thos. Hoggett, near Aldbrough.

Class II.

For the best Ploughboy, 4*l.*, second 2*l.*, third 1*l.*—1st, Geo. Newby, servant to Mr. Raine, Barton; 2nd, Thos. Meynell, servant to Mr. Wm. Carter, Applegarth; 3rd, Wm. Dumhill, servant to Mr. Carter, Scales.

SHEARING.—Class I.

For the best Yan of 3 Shearers and a Binder, 5*l.*, second 2*l.*, third 1*l.*—1st, Richd. Alderson, Chris. Baines, Wm. Horne, and Geo. Harker, labourers to Mr. Fryer, Catterick Bridge; 2nd, Robert Barker, Thos. Malthouse, Robert Hodgson, and another, servants to Mr. Wm. Raine, Barton; 3rd, Thos. Robinson, and party, servants to Messrs. Todd and Clark, Aldbro.

There were in the whole 19 parties of four in each party in competition for the prizes for reaping, so that 76 labourers were stimulated to improvement in reaping, an operation which is too indifferently performed in this part of the county.

Class II.

For the best Yan under 18, 4*l.*, second 2*l.*, third 1*l.*—1st, John Hobson, Thos. Sample, and 2 others, Barton; 2nd. Pattison Orton, and 3 others, labourers to Mr. J. Plews, of Colburn.

SWEDISH TURNIPS.

For the best five acres of Swedish Turnips, 5*l.*—There were several competitors for this prize.—Mr. Joseph Johnson, Cleasby.

SHORT-HORNED CATTLE.—Class 1.

Best Bull, 10*l.*, second 2*l.*—1st, R. M. Jaques, Esq.; 2nd, Ditto.

Bull, calved since 1st January, 1840, 5*l.*, second 2*l.*—1st, Mr. Dale, Catterick; 2nd, R. M. Jaques, Esq.

Steer, 2*l.*—1st, Mr. Fryer, Catterick Bridge.

Best cow, 5*l.*, second 2*l.*—1st, John Booth, Esq.; 2nd, R. M. Jaques, Esq.

Two-year-old in-calf Heifer, 2*l.*, second, 1*l.* — 1st, Mr. John Beetham, West Harlsey; 2nd, John Hutton, Esq., Sowber Hill.

Yearling Heifer, 2*l.*, second 1*l.*—1st, R. M. Jaques, Esq.: 2nd, ditto.

Class II.

Best Bull, 5*l.*, second 2*l.*—1st, Mr. Dale, Catterick; 2nd, Mr. John Armitage.

Bull, calved since 1st January, 1840, 5*l.*, second 2*l.* 1st, Mr. James Bell; 2nd, Mr. Dale.

Steer, 2*l.*—Mr. Fryer.

Best Cow, 5*l.*, second 2*l.*—1st, Mr. Fryer, Catterick Bridge; 2nd. do.

Two-year-old in-calf Heifer, 2*l.*, second 1*l.*—1st, Mr. John Thompson, Cathrick; 2nd, Mr. Wm. Mitchell, Low Street.

Yearling Heifer, 2*l.*, second 1*l.* — 1st, Mr. John Thompson, Cathrick; 2nd, Mr. Wm. Mitchell.

Class III.

Cottager's Cow, 3*l.*, second 1*l.*—1st, Christ. Fryer, Gilling; 2nd, Wm. Tennant, Gilling.

Class IV.

Shearling Tup, 7*l.*, second 2*l.*—1st, Mr. Richd. Outhwaite; 2nd, Mr. John Grozier, Caldwell.

Aged Tup, 5*l*, second 2*l.*—1st, Mr. Bell, Newsham; 2nd, Mr. Wm. Allison.

Pen of Ewes, 2*l.*—Mr. T. S. Walker, Maunby Hall, near Thirsk.

Pen of Wethers, 2*l.*—Mr. C. Watson.

Tup Lamb, 1*l.*—Mr. Telford, Middleton-Tyas.

Gimmer Lamb, 1*l.*—Mr. Stephen Braithwaite.

Class V.

Hard Tup, 2*l.*—Mr. Jas. Hutchinson, Helwith.

Class VI.

Boar, large breed, 2*l.* — Offered by John Rolling, Esq.; Mr. Cundale.
Sow, large breed, 2*l.*—Also offered by Mr. Rolling; Mr. C. Watson.
Boar, small breed, 2*l.*—R. M. Jaques, Esq.
Sow, small breed, 2*l.*—Mr. Booth.
Fat pig, 2*l.*—Mr. James Harrison, Easby Mill.
Three store pigs, 2*l.*—George Dinsdale, Richmond.

Class VII.

Cottager's pig, 2*l.*, second, 1*l.*—George Hayward, Richmond.

Class VIII.

Field mare, 3*l.*—Rev. W. F. Wharton.
Coach mare, 3*l.*—Mr. W. Allison, Ellerton-on-Swale.
Cart mare, 3*l.*—The above was not awarded.—Not sufficient merit.
Road Mare, 3*l.*, Mr. John Stoddard.
Two-year-old Coaching Filly, 2*l.*, Mr. Wm. Mitchell, Low-street.
Two-year-old Coaching Colt, 2*l.*, Mr. C. Watson.
Foal by a Blood Horse, 1*l.*, Mr. Christopher Meynell.
Foal by a Coaching Horse, 1*l.*, Mr. Lister.

PRODUCE STAKE FOR 1842,

Of one sov. each, for Calves under twelve months old, to be shewn in two classes, Bulls and Heifers. The second in each class to save his stake. The Stakes p. p. if the produce be alive on the day of show.

Mr. Outhwaite, a heifer............	1
Mr. W. Harrison, a bull	
Mr. Charge, a heifer	2
Mr. Charge, a bull................	

The Chairman then proposed the health of the Judges, to whose services they were all materially indebted, and whose decisions he hoped had given general satisfaction. *(Applause.)*

Mr. Grey returned thanks on behalf of himself and his colleagues. He had not attended the previous meetings of the society in Richmond, but he could say that in many classes the present exhibition was exceedingly good, and in all it was very creditable. In some cases the judges met with difficulty in coming to their decisions, the merits of the animals being so nearly balanced. He was happy to see that among other objects to which the society had given its attention, it had been endeavouring to promote an improvement in the manner of getting in the grain, which was much required. He was also surprised to see that in many parts of England manure was obtained from foreign lands, and yet their own manure was suffered to be wasted. *(Cheers.)* He trusted the society would persevere in its course; but it was not the giving a premium and having a field well cut among different competitors, that would produce general good, unless the matter was also attended to elsewhere throughout the country, and unless every man upon his own farm would offer something like a premium or reward for work being properly done, whether in the shape of wages, or anything else. He thanked them for the pleasure they had conferred upon him in inviting him to be a judge upon that occasion. He had seen an excellent show of stock, and a large number of intelligent gentlemen, whose sole object was to promote the general welfare of the country. *(Cheers.)* With all his predilection for agriculture, however, he was quite of opinion, that the various classes of this country must stand or fall together; at the same time, he conceived that every man who in his own locality promoted the interests of agriculture, was conferring a benefit on the country at large—he was increasing the amount of individual happiness, at the same time he was promoting the prosperity of the nation. *(Hear.)* In former years, he (Mr. Grey) was a resident in that town, and he had not visited it for a long time; that day he had had an opportunity of reviving old associations—renewing old acquaintances, and calling back those days of thoughtless boyhood, when in the school in the churchyard, he sometimes met the frown of his excellent old master, from whom he had received so much kindness, and of whose general benevolence of disposition many persons present could speak. *(Cheers.)* He had to propose a toast which he was sure all present would feel pleasure in drinking—the health of a class of individuals, without whom all efforts would be vain—without whose assistance and able concurrence nothing that the farmer undertook would prosper—and all that chemical science could add to the promotion of the vegetation of our country—all that skill and knowledge could contribute to the improvements of our agricultural implements, would go for nothing, if they had not the skill of the honest industrious peasantry. *(Cheers.)* He had therefore great pleasure in proposing health and prosperity to the labouring classes of this country. *(Applause.)*

The agricultural labourers to whom premiums were awarded were then introduced, and addressed by the Chairman, a printed certificate of their merit, in a neat frame, was presented to each of them, together with their premiums.

Mr. Clyburn, of Uley, returned thanks on behalf of the agricultural labourers. There were many gentlemen present who were taking great interest in furthering the views of the labourer; and he trusted they would pardon him if he pointed out one source of improvement necessary to the labouring classes—he alluded to education. *(Applause.)* He meant a general and scientific education. A scientific education might be taught the labouring classes with as little expence as they were taught their A B C. It was given to mechanics and to operatives by means of mechanics' institutions. Why not form farmers' servants' institutions? Books are cheap, and a simple library might be formed at first, which could be increased in value as the servants improved in education. *(Cheers.)* Servants would then know how to manage a good implement when it was put into their hands, and they would properly appreciate its value, which, from their ignorance, was not always the case at present. In the establishment with which he was connected, if they got a man tolerably well educated, they found him to be a superior servant, one who was more willing than others, and they could depend upon his services. If they obtained a man not educated, he was likely to be a drunkard, and if they told him to do certain work, it was probable he would tell them he knew better than they did. Instruction, therefore, rendered men better workmen, and he contended that ignorance is the curse of society. *(Applause.)*

Capt. Morley proposed the health of the successful competitors. The stock which had been shown might have been sent either to Bristol, to York, or even to Edinburgh, and it would have elicited encomiums from every one. *(Applause.)*

The Rev. W. F. Wharton in returning thanks, said the present was a proud day to him, especially as regarded the animals. He had three times competed for public prizes, and had been three times successful. He recommended all competitors to follow his example. They had had that day an opportunity of seeing many good implements, which they might purchase cheaper than they could if they sent to the makers for them. He had expended his premiums, and a little more, in purchasing an implement, from which he hoped to derive double the benefit he should have done from the money it had cost. He hoped that hint would not be thrown away, especially as regarded turnip-cutters. He had a considerable quantity of turnips, and he thought they were all going off from caterpillars and grubs, when he gave them a slight sprinkling of soot, and they began to flourish again, and are now a good crop. If he had let them go on another fortnight, the whole would have been destroyed. Mr. Wharton concluded by proposing "The Unsuccessful Candidates." *(Cheers.)*

Mr. Severs briefly returned thanks.

Mr. Lister proposed the health of the Mayor and Common Council of Richmond. He was sure the prosperity of that town was the wish of every person present, and of every person in the neighbourhood. (*Applause.*)

The **Chairman** stated that the Mayor and Corporation of Richmond had increased their benevolence by a donation this year of 5*l*. (*Cheers*)

The Right Worshipful the Mayor of **Richmond** said he felt exceedingly obliged for the kind manner in which they had noticed the council of the borough; and he also returned thanks for the compliment and honour which they had done him. With regard to the little the council of the borough had been able to do in support of that institution, he might be allowed to say that it would have given them pleasure to have contributed ten times the amount, if their funds would have allowed it. At the commencement of the institution, when its funds were smaller, the corporation gave 20*l*., and they stated that they should continue to do so, as long as they derived any portion of their income from so objectionable a source as market tolls upon corn. They felt that they could relieve the farmers from this tax, and in giving up 100*l*. (perhaps he would be nearer the mark if he said 200*l*.) per annum, they felt they could not afford to give so large a sum as they had previously done to that association. They were unwilling to tax the inhabitants of the borough in order that they might have funds to appropriate in that way, and he was sure that parties would not wish it. They had therefore voted the sum of 5*l*.; and seeing that large premiums were awarded for the production of the finest cattle—and wishing also to do something for the cultivation of the soil, they offered a small sum to the tenant farmer whose farm was in the best state of cultivation. They conceived that much had been done for the encouragement of those who brought cattle to the show, but not much for the tenant farmer in improving the soil. This they thought a great point, for food must be provided somewhere, and if it could be produced at home, so much the better. Though 5*l*. was but a small premium, yet it was appropriated in a different manner to that generally followed by the society. The farmers had not been accustomed to compete in this way, and the corporation yesterday agreed to place this sum in the hands of a committee, to be disposed of as they might think proper. (*Cheers.*) His worship concluded by proposing the Vice-Presidents of the Society. (*Applause.*)

Mr. **Charge**, in returning thanks, alluded to the great exertions made by the president on behalf of the society. If it had not been for those exertions, they would not have had the show of stock and assemblage of gentlemen which they had witnessed that day. In noticing the benefits derived from agricultural associations, Mr. Charge hoped that the local societies would increase in usefulness, and that the larger societies would also prosper. He hoped that the time would come when the Yorkshire society would hold its meetings at Richmond. (*Cheers.*)

Mr. **Mauleverer** proposed "The Agricultural Implement Makers." These gentlemen had attended at considerable personal trouble and expense, and had contributed much to awaken them to what might be done by becoming possessors of such implements as had been exhibited and tested. (*Applause.*) They were too well aware with what rude, simple, inefficient, miserable implements the tenantry, and even the proprietors of this country are in general working. Was it not, then, most important that they should have the opportunity presented of seeing how far behind they were—how much they had to learn, and how easily they might obtain that knowledge, and possession of those implements? He thought that they could not too highly appreciate the services of those gentlemen who had rendered them assistance that day. It was exceedingly gratifying to see such men as Lord Ducie taking a part in promoting the improvement of agricultural implements, who did not think it derogatory to his high station or dignity to lend his powerful name and great example in improving and encouraging the general use of these implements. When such gentlemen as the Duke of Richmond, the late Lord Leicester, and others took part in the formation of agricultural societies as these gentlemen had done, he looked upon it as an encouraging proofof the progress we are likely to make in the hitherto backward science of agriculture. He congratulated them on having present a gentleman who had made them a practical speech, which, in his opinion was too seldom heard—he alluded to Mr. Grey, whose treatises in the reports of the Royal Agricultural Society had commanded his attention and attracted his admiration long ago. He was glad to see gentlemen like Mr. Grey coming among them and affording them demonstration of what might be done. Hitherto he was afraid agricultural societies had not looked to the great interests and high obligations which rested upon them individually—the duty of increasing the sustenance of their fellow-creatures, and rendering them more happy, peaceful, and contented, by multiplying the produce of the earth. But there was now abroad, a growing feeling among gentlemen as well as farmers to promote and discharge their duty, not merely to themselves but to their fellow-creatures. (*Applause.*) Ever since he (Mr. Mauleverer) took any interest in agriculture, ever since he became a resident landlord, he had said to himself, was there nothing but mere personal amusement that he was to devote himself to—was he not bound to make those acres he possessed which appeared uncultivated and profitless, produce what he knew they were capable of producing—was he not to make them subservient to the good and happiness of mankind? He would take into his own hands the land upon which his tenants said they could not make any improvement but must abandon if their rents were not reduced, being certain that it was capable of producing the rental paid for it. And he was happy to say, though in the outset he might not have gained profit, he had now the pleasure of seeing lands formerly clothed with nothing but thistles, and docks, and weeds, now covered with plentiful crops of corn. (*Cheers.*) It was of high importance to the good of the country that there should be a resident gentry among the people. He had always said if he was entrusted with property he was bound to reside upon it, and had no right to spend his time in distant lands in mere idle occupation, leaving his property to the charge of persons who had a very insignificant interest in it, and throwing out of employment a great number of labourers. By residing on their property the gentlemen of the country had it in their power to give protection to ten times the number of labourers which they otherwise would do, and to make these people well affected. They would then have at their command a contented and happy peasantry. How could they expect, if they were absent, and did not afford employment for the people, that these people should remain among them to starve? They must go to the manufacturing towns, and ultimately in cases of depression or reverse, they would be driven back to the parish rates. The gentry deserved what followed, which they had brought on by their own folly. Mr. Clyburn had said it was desirable that education should be disseminated more largely among the agricultural labourers. He (Mr. Mauleverer) had long cried out for it. He had loudly and continually implored that they should establish agricultural schools in this county. He plainly saw the necessity of them. The men they employed now were deplorably ignorant. They could not understand the implements put into their hands, and therefore they were prejudiced against them. If they had the slightest education these men would work the implements with satisfaction to themselves, and great benefit to their employers. Why should this country be behind foreign countries in education? When he (Mr. Mauleverer) was abroad two or three years ago, he went to the great school near Paris, and there he saw from two to three hundred young men brought up in practical agriculture. These men were to become bailiffs and stewards of the nobility and landed proprietors of France; they were taught not theoretically only, but practically, everything connected with agriculture. He accompanied them in the morning to their studies in the fields, and in the afternoon to the stables, accompanied by the veterinary surgeons, who explained the diseases of the animals, and the results of bleeding and blistering, and so forth. Was there anything in this country like that? Could they trust their own men to administer medicine to their stock? Rarely indeed; as they knew nothing of diseases, or the cause of diseases;—it was all guess work in general. The blame was to be attributed to the landed proprietors; they did not do their duty. A proprietary school might be established by shares, where information might be afforded through lectures and otherwise, which at present was out of the reach of agricultural servants. This information was afforded to the peasants in Switzerland—why should it not in England? (*Hear.*) In France they have three, four, or five royal veterinary institutions, in which three or four hundred young men are trained as veterinary surgeons. After the army is supplied, the rest are distributed over the kingdom. Was there anything of that kind in England? But he was only wandering from the subject he commenced with. He begged to recall them to the obligation which they all owed to the gentlemen who had attended there that day—the agricultural implement makers. He hoped they would have the kindness, when another opportunity presented itself, of again attending. Though they might not meet with their immediate reward, yet, eventually, they would do so, the people not being so dead asleep as they formerly were. He proposed the health of Messrs. Ransome, Ryland, Clyburn, Crosskill, and the other implement makers, with thanks for their services. (*Applause.*)

Mr. RANSOME would have regreted being called again before them under any other circumstances than those in which he was placed. He should not have done justice to himself, or to them, if he had not availed himself of the opportunity of making a remark or two with reference to the visit of himself and his colleagues. He was perfectly satisfied with the manner in which the trial of implements had been conducted. (*Cheers*). If any advantage was to be derived from the use of good and perfect implements, that advantage would be increased in a tenfold degree could they bring them forth under circumstances of fair competition. At agricultural meetings, the time appropriated for carrying into operation the awarding of premiums to implements was so short, that it was in the power of any one who chose to compete for the prize, and beguile the judgment of the judges by a machine, which for a short time would perform its work, but if subjected to a fair test would be found to be on the whole incompetent to that for which it was intended. The prize, under such circumstances, however valuable it was for puffing the exhibitor of the implements into notoriety, instead of tending to supply the farmer with good implements, often induced him to purchase such as turned out ultimately to be worthless. To such an extent had this been the case, that he (Mr. Ransome) had determined in future not to place his implements in competition with those of others; but upon hearing of the proposition of Mr. Jaques, he said if it were possible for him to attend the trial of implements, he would do so. (*Cheers*). Under these circumstances he had attended there; his friend Mr. Clyburn had come nearly the same distance. The pleasure of meeting was unexpected on both their parts. The same principle that had actuated his friend had actuated himself; and when an opportunity was afforded of giving a full and fair test to the implements exhibited, those which were valuable would be brought under their notice, whilst the owners of the implements that were good for nothing would be glad to keep them away. (*Applause*). He availed himself of that opportunity of thanking all those gentlemen with whom he had come into contact during his visit to Richmond for their attention, and particularly those gentlemen who had judged between the merits of his implements and those of his competitors. And whatever might be the result, the test was all they could desire, and they had confidence in the decision of the judges. A too exclusive dwelling upon their own perfections often blinded individuals to the merits of others; but from the present trial both him and his competitor would reap an amount of advantage which would tend to induce them to introduce better implements than either of them had done before. He congratulated the society on having so respectable, enterprizing, and spirited a man as Mr. Jaques at its head. The subject of education had been mentioned; and he had often heard it remarked, that by educating the labouring man he would be raised above his station. In his (Mr. Ransome's) manufactory 200 men had formed themselves into a mutual improvement society. Among that two hundred men there was rarely if ever cause of complaint. Another instance of education not unfitting men for their station was known to some gentlemen in that room—he alluded to the individuals who were originally employed on the example farm at Whitfield These young men were so highly educated, that after having gone through their labours in the field, they studied various languages; and on one occasion they wished to survey the fields, doubting the measurement of the assistant tithe commissioners, in order that they might test it by logarithms. (*Cheers*). Education taught men correct views of their duty, and that it was to their advantage faithfully to discharge it. It gave them a full conviction of the responsibilities which rested upon them, and opened for them the springs, whose refreshing showers cheered and invigorated them in their passage through the wilderness of life. It opened to them a fund of employment—a mine of inexhaustible wealth in the cultivation of their intellects, from which both themselves and others would realize an amount of advantage which none could fully calculate. Knowing that toil is to be their lot, while education cannot altogether keep them from difficulties, it will teach them how to bear up under them; and no wealth is equal to that which a man possesses in himself. Increasing intelligence was one of the features of the age; but if that intelligence was not properly directed, and if men's minds were not prepared by education for the improvements that are making around them, they were likely to be influenced by their own prejudices, and to become a prey to designing individuals, who would beguile their judgments. Against this evil, and the results which would attend it, education was the only safeguard, as it would most assuredly teach the labouring classes to think for themselves. He had seen the advantages to be derived from education, and he believed it would tend more to improve the condition of the labouring classes than anything else that could be done for them. If they appointed a committee to take the subject into consideration, he should be happy to present a small donation of 5*l.* towards carrying out the end in view. He had only in conclusion to return his sincere and heartfelt thanks for the attention which had been paid to him, and to assure them before he felt Yorkshire, that whether the time be long or short when he returned to it, he should always carry with him a pleasing recollection of every thing he had met with during his present visit. (*Cheers.*)

The CHAIRMAN next proposed "Success to the Royal English Agricultural Society." During his speech, Mr. Jaques said that a sweepstakes had been commenced to be paid to the occupier of the farm upon which the reaping should be best performed. Half the sum was to be distributed by the winner of the stakes to his own labourers at his own discretion; and he was to furnish an account of that distribution to the committee of the society, in order that it might be published. If they obtained twenty subscribers, they might divide the premium into two classes—the occupiers of less than 25 acres, or above 25 and under 50, or more, as might be agreed upon. He hoped from the remarks which had been made that day, that the Royal English Agricultural Society would adopt the plan which had been followed at Richmond of affording an opportunity for the trial of agricultural implements. He would therefore propose Success to the Royal English Agricultural Society, coupling with it the name of Mr. Shaw. (*Applause.*)

Mr. Shaw said, although there were other gentlemen present members of the Royal English Agricultural Society, yet he should feel himself much wanting in the duty he owed to the society as a member of its council, and also to the company present, if he hesitated in returning thanks for the kind manner in which the last toast had been received. With reference to the trial of implements by the Royal English Agricultural Society, he concurred in the remarks that had been made; and he had on several occasions endeavoured, and to a certain extent succeeded, in getting certain rules laid down, for the purpose of having these trials, but as yet they had not succeeded to the extent the Richmond Society had done. He trusted the result of the present trial would produce its due influence on the members of the council of the Royal English Agricultural Society. (*Cheers.*) He attended the meetings of the council pretty regularly, and he should not neglect the opportunity of stating what he had seen and heard at the present meeting. Mr. Shaw, in a long and able speech, alluded to the practical character of the proceedings of the present meeting, and the advantages which would accrue from them. The length to which our report has extended, alone prevents us from giving his address entire. He concluded with proposing thanks to the committee of management, coupling with it the health of Captain Harland. (*Cheers.*)

Capt. Harland acknowledged the toast.

The Chairman then proposed success to all the neighbouring agricultural associations, which was responded to by Mr. Lister.

This finished the official list of toasts, but the company did not break up until a considerable time afterwards. The proceedings of the anniversary gave pleasure and satisfaction to all present, and tended more, in our opinion, to the improvement and advantage of the real cultivators of the soil, than any agricultural meeting which we have hitherto attended.

The attendance at Mr. Fisher Hobbs's annual sale at Mark's Hall, on Thursday, Aug. 25, was, notwithstanding the depression in prices now generally experienced, fully as numerous as in any former year. Amongst the company present were Lord Western, Osgood Hanbury, Esq., the Rev. W. Honeywood; A. Cliffe, Esq., Enniscorthy, Wexford, Ireland; Messrs. Dixon, Johnson, W. and J. Hutley, Beadel, Gilson, Matson, Unwin, Clift, W. Shaw, &c. &c. Sir H. Smyth, Bart., M.P., and C. G. Round, Esq., M.P., were unavoidably prevented from attending. The cattle and sheep sold quite as well as could have been anticipated—say at a depression of twenty per cent. below those of last year. A young short-horn bull was bought by Mr. Cliffe to go to Ireland, at 52 guineas; an application from the Earl of Kingston for this bull arrived too late. We understand Mr. Hobbs is about to send a Hereford bull, some Hereford heifers, and some Leicester sheep, to Ireland. Mr. Hobbs must have been much pleased in seeing so many of his friends rallying around him upon this occasion; nor do we think it possible he could be otherwise than highly gratified at the expressions of approbation of his character as a breeder of stock, and of his independence as a British farmer, warmly and enthusiastically tendered by his friends and neighbours.

LETTER FROM MR. MILBURN, IN REPLY TO DR. MADDEN.

Sir,—I was truly glad to see Dr. Madden's letter in your last number, on the subject of my remarks on his "Essay on the Analysis of Bones and Rape-dust;" because it has given me an opportunity of proving that the mode of calculation in his essay is erroneous in a way which I think he will himself admit the truth of. *Before*, I expressed my doubts and made enquiries; *now*, having seen his explanations, I think I shall be able to shew his views and calculations quite erroneous.

Whatever fear or dislike Dr. Madden may have to paper controversy on scientific subjects, I have none—nay, I think it is the only means of arriving at true principles; and, whatever some writers may do, I trust I shall never be found indulging in ungentlemanly or ill-natured language. I certainly wish Dr. Madden had been a little less severe: his remarks are hastily written, but I am sorry they contain so much appearance of ill-temper, because readers generally will take it as a certain proof that he is in error, and be prejudiced against him. I pass over the Dr.'s expressions, which some persons will call contemptuous, because words prove nothing; and he is, ere this, I am sure, too much of a gentleman not to be sorry for having made use of them.

It will be remembered by those who read my remarks in the *Magazine* for August, p. 99, that I expressed a belief that the Dr.'s mode of calculation was fallacious in itself, and that the construction of his previous tables (viz., 4 and 5), which formed his data of calculation, tended to make the result still more erroneous. The Dr. has selected two instances to show my incorrectness by illustrations. Now let us examine these.

He complains of my adding together the data in table 4, because he says—"they do not represent the analysis of either of the three manures, but merely their relative proportions of ingredients." He will not say, I apprehend, that these proportions of ingredients are not arrived at by analysis; because certainly he takes from these the data of his calculation. If the table does not represent the analysis, why does he calculate from it, and treat it as if it did? Is he not speaking of table 4, when (page 98) he calls it "the above anylysis;" and his speaking of "the *previous* analysis" could have no meaning if the *succeeding* table did not represent one.

The construction of table 4 has the effect of increasing the list of ingredients: this must be quite clear, and *this alone*, by the Dr.'s subsequent mode of calculation, tends to make the result more fallacious. This I will clearly demonstrate, and use a similar mode of illustration that the Dr. has adopted in his last. Suppose two purses, one to contain 100*l.*, the other 200*l.*, in the following proportions:—

No. 1.		No. 2.	
In Gold.......	£60	In Gold......	£120
Silver......	30	Silver	60
Copper	10	Copper....	20
	£100		£200

Now it must be clear that No. 2 is just double the value of No. 1. Take the Dr.'s mode of calculation*, however, and you make it—

No. 2, as regards Gold, has 2ce as much as No. 1.
,, Silver, 2ce ,,
,, Copper. 2ce ,,

Now, by adding together the degrees in which No. 2 is superior to No. 1, we shall make it to be six times superior in value, or = 600*l*. Now take the Dr.'s method of increasing the number of ingredients as in his *table* 4, and we shall add to the fallacy of the conclusion. Let the contents of the purses then stand thus represented :—

No. 1.		No. 2.	
In Sovereigns	£50	In Sovereigns. ..	£100
Half-sovereigns	10	Half-sovereigns	20
Crowns	20	Crowns	40
Half-crowns...	10	Half-crowns...	20
Pence.........	5	Pence.........	10
Half-pence....	5	Half-pence....	10
	£100		£200

Now
No. 2, as regards Sovereigns, has 2ce as much as No. 1
,, Half-sovereigns 2ce ,,
,, Crowns 2ce ,,
,, Half-crowns 2ce ,,
,, Pence 2ce ,,
,, Half-pence 2ce ,,

Add together the various degrees in which No. 2 is superior to No. 1, and we shall find it is twelve times as much, or = 1,200*l*.; whereas it contains really only 200*l*.

If the Dr.'s principle of calculation had been correct, this would have been so, as well as that in the note below. We know it is not. I think Dr. Madden will now see the matter clearly, as well as your readers, that his "taking the relative proportions in each of the different classes of ingredients" in table 4, and subjecting them to his peculiar arithmetical process, makes a result varying most entirely from the truth ; and, indeed, by increasing tests to obtain ingredients of different degrees of solubility, thus multiplying data, as in tables 4 and 5, it could be easily made to appear, by this principle of calculation, that 1 ton of bones equalled 50 tons of farm-yard dung, or anything else. Dr. Madden objects to my mode of reversing his table, and introduces algebraic signs to prove me to be wrong. Why, if this mode of reversing his table is to be adopted, there is an end of the question ; for it must lead to the same result, if 2 taken from 2 leave nothing. I can shew the above known to-be-erroneous table to be correct by the very same process :—

Purse No. 2.		Purse No. 1.	
Sovereigns	+ 2	Sovereigns....	— 2
Half-sovereigns	+ 2	Half sovereigns	— 2
Crowns.	+ 2	Crowns	— 2
Half-crowns. ..	+ 2	Half-crowns ..	— 2
Pence	+ 2	Pence........	— 2
Half-pence....	+ 2	Half-pence ...	— 2
	+12 times		—12 times

This is truly an "admirable way of making money," as it is of multiplying the value of manure. But your readers of my remarks would see that I doubted not the correctness of the table with itself *when obtained*, but the *principle*—the *mode of obtaining it*, and took with this view a different standard. Unfortunately a figure or two were miscalculated, but this did not affect the *principle* of the question, and which I do submit the Dr. has never yet proved to be correct. For anything he has said to prove it the contrary, it is altogether wrong. My unfortunate ignorance of arithmetic may be pitied ; but for all that, the Dr's. principle of calculation stands condemned ; and I much mistake Dr. Madden's character as a philosopher, as a lover of truth, and as a gentleman, if he does not at once acknowledge himself in error.

In reply to the Dr's. remark that he cannot discover the data of my last table but one, (p. 100) I simply tell him I obtained it from his own table, (5) saving the error of figures above alluded to. I may also say that the 45.535 instead of 11.5 was, I believe, a misprint ; but it was at *my own request* that the Dr's. essay was given along with my remarks, (see the heading of my remarks, p. 99) so that there might be no misrepresentation.

He objects to my statement of the quantities of azote being an answer to the question, and compares the quantities in each. But he takes no notice of the fixed character of the azote in bones, and the volatile character of it in farm-yard manure—to which it may be remembered I particularly adverted. He has not told us, however, if the obtaining of the azote did not decompose some part of the other ingredients ; nor, indeed, does he say that he obtained the azote himself, nor how he obtained it.

He has not accounted for his plan of making one ton of bones equal *nearly ten tons of rape-dust*, nor that the land obtains a greater quantity of phosphate from a dressing of farm-yard dung than one of bones, though he attributes the value of the latter principally to that ingredient.

A neighbour of mine, Mr. Edward Addison, a practical chemist, took up the *Farmers' Magazine* containing the Dr's. essay and my remarks, and before the Dr's. last letter was published forwarded to your magazine some observations on the subject in dispute. It seems it had been too late for the last number, and will probably appear simultaneously with this. He may, perhaps, not be quite so ignorant of chemistry as I am made to appear.

Yours, very truly,
Matthew Marmaduke Milburn.

Thorpfield Thirsk, Sept. 5.

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* To shew how the fallacy really exists in the case under consideration, the following mode of illustration will strictly apply. Suppose the analysis of bones and farm-yard dung stood as under :—

	Bones.	Farm-yard Manure.
Soluble matter....	4 parts.	2 parts.
Easily dissolved ..	2 ,,	1 ,,
Azote.	6 ,,	3 ,,
Phosphates	8 ,,	4 ,,
Organic	10 ,,	5 ,,

It is as clear as possible that bones would be exactly *double the value* of farm-yard manure, ton for ton ; but, by the Dr.'s mode, 1 ton of bones, as regards—

Soluble matter.. equals 2 tons of farm-yard Manure.
Easily dissolved ,, 2 ,,
Azote .... ,, 2 ,,
Phosphates.... ,, 2 ,,
Organic ...... ,, 2 ,,

Add together the various degrees in which bones are superior to farm-yard manure, and it will appear that 1 ton of bones equals 10 tons of farm-yard manure ; whereas it really equals only 2 !

ON THE NECESSITY OF A GENERAL ENCLOSURE BILL, AND THE INVESTMENT OF CAPITAL IN PERMANENT IMPROVEMENT OF LAND.

That great distress exists at the present moment throughout a large portion of our manufacturing districts there is no doubt; that this distress is owing to the corn laws, is a point in dispute, upon which it is not necessary to my subject to give an opinion; but that it is increased by scarcity of provisions, and would consequently be lessened by a greater abundance of food, admits not of contention. It must be the interest of all parties, that the supply of food should in some way be increased—the consumers have a right to say to the home producers—grow us more corn and meat; more we must and will have; we are willing to give you the preference, provided you have the power and the will to produce it; but we cannot wait—we are driven already to go to a foreign market for a portion of our supplies, the obtaining of which is clogged with considerable obstacles for your benefit; a rapidly increasing population will render a larger quantity annually necessary, and we cannot allow those obstacles to continue in the way of our procuring that increased supply, unless you can prove to us that you have the power to raise it, provided such or some protection be continued; and moreover, we cannot allow it, unless we see immediate steps taken on your part to carry that power into execution. We must see on the part of the landed interest a general and immediate endeavour to increase the produce of the soil, and we expect that every measure having this for its object will be sought out and encouraged by you. The greatest stickler for things as they are, cannot, I think, object to the above method of putting the question; cannot deny that the consumers, being more numerous than the producers, have the power, if they properly and justly exert it, of effecting what they will; and he must acknowledge that, whilst he fails to exert all the means in his power, to comply with the just demands of the more numerous party in the state, he has no right to blame the latter for taking more summary steps for accomplishing its object, that of obtaining a more abundant supply of food, even if those steps should be seriously prejudicial to his interest.

It strikes me that the landed interest of this country is in the situation alluded to above; whilst denying on one hand the right of the consumer to buy food at the cheapest market, it does not, on the other, take all the steps in its power to supply that food cheaper at home. That the agricultural interest requires protection I have no doubt, and on the kind and degree of that protection I have given an opinion in a former article; but for what is this protection given? Does it not imply a tacit agreement for increased growth? Undoubtedly; because it excludes foreign competition. I may be told that production on a limited extent of surface cannot keep pace with an unlimited increase of consumption. Granted—but before the argument is of any avail, show me that cultivation has reached its limits.

I have on a former occasion endeavoured to show that the judicious application of capital to a large proportion of the cultivated lands of this kingdom would enormously increase their produce; my object is now to suggest another source of supply, in the application of capital to the existing uncultivated or waste lands. The great obstacle to this, it is well known, is the expense of procuring an Act of Parliament for each common or waste ground to be enclosed: the remedy for which lies in obtaining a General Enclosure Act. Here then is a step which the landed interest might immediately take, to shew that whilst seeking to keep out foreign corn, it also seeks the means of increasing the home growth. Of the advantages to be derived from a General Enclosure Bill, there can be little doubt, and the introduction of such a measure and carrying it through the Legislature, would come with peculiar grace at the present juncture from the landed interest. The expense of an Act of Parliament deters many parishes from attempting an enclosure; in fact in some cases it is nearly equal to the fee-simple of the land—a late enclosure, in a parish with which I am connected, cost nearly twenty-five pounds per acre!—add to this the expenses of levelling, ditching, draining, and claying, and the rent will be but poor interest for the capital thus added to the original value.

I imagine there would be but little opposition to an Enclosure Bill. It should enable any parish, upon the application of the owners of a certain amount of the property, to carry their wishes into effect, at the expense only of the commissioners of apportionment. The new enclosures should be free for four years from tithes, poor-rates, and other parish charges.

We have a scarcity of corn—import it! We have a superabundance of labour—export it! We have vast quantities of waste land requiring that labour to enable it to grow corn—let it lie idle! Rather, say I, employ the money proposed to be expended in emigration, and the labourers, the object of it, in cultivating those waste lands which are now of no value to the country or to their owners. The numerous applications for every farm which is vacant prove that there would be no want of tenants for any number of small farms thus reclaimed; and the vast quantity of labour which they would at first require would be a great relief to those districts now possessing a surplus of hands; and how much better thus to employ it, than to feed the labourers idle at home, or to send them to raise produce where there is no market for it. If the money which has been expended in emigration, and in the purchase of foreign corn, during the last four years alone, had been devoted to the permanent improvement of old, or the cultivation of new soils, it would, in my opinion, have rendered us independent of foreign supplies. I have no means of arriving at the sums expended in emigration; but there was admitted for home consumption in

	Qrs.
1838, Foreign Grain and flour equal to	1,834,453
1839,	2,681,390
1840,	2,436,665
1841,	2,413,216
	9,365,724

Nearly ten millions of quarters—for which little short of twenty millions sterling has been paid to the exporting countries. With such a drain of gold, is it a wonder that our exchanges are deranged?—that trade and commerce are crippled?

—that the resources of the country are paralysed?—and for what? To buy food which we can, which we ought, to grow at home.

With such a proof before their eyes of a ready market for their produce, can the owners of land hesitate a moment in applying all their resources to its improvement? With land, labour, capital, and never-failing demand, why have they not endeavoured to keep the trade, if I may so call it, of supplying this demand, in their own hands? Why have they laid themselves open to the charge made above—of not taking all the steps in their power to supply the food which over population requires? There are glorious examples (many in our own counties); I need only name one—Lord Leicester—but why are they so few? Influence, political influence, is undoubtedly a great drawback to their own, to their country's interest. Suppose the owner of a large estate requiring improvement, with twenty thousand pounds to spare, and an adjoining property of that value in the market, does he hesitate a moment to purchase it, although the investment will pay him only three or three and a-half per cent., when he might readily make five per cent. by expending it in permanently improving the land he already possesses, with equal security, although with no increase of influence. In proof of this, look at the statement made by Lord Ducie the other day, relative to his example farm at Whitfield. The rent of this farm, when his lordship took it into his own hands, was 200*l*. per acre; he has since laid out 3500*l*. in permanent improvements, such as building, draining, &c. He is now offered 500*l*. per annum for it, thus obtaining 300*l*. interest for 3500*l*. invested, equal to eight per cent!—thus greatly benefiting himself; and how has he benefited the community? Why, an amazing increase of corn and meat raised off the farm—more than doubling the produce of corn and roots off the land previously in tillage—breaking up a large portion of the farm not before cultivated, and yet keeping thirty-one beasts and one hundred sheep, where sixty head of cattle and a few pigs only were previously to be found. The example speaks volumes: and for what was it instituted? His lordship shall tell us:—

"I did not establish Whitfield farm as an example to the enlightened agriculturist; neither did I consider when I undertook to drain a large portion of the land, that I was giving an example to the renting farmer; or men without capital; but I intended to give an example to the neighbouring landlords. I wished to open the eyes of the owners of the soil to the advantages which would accrue from the proper application of capital; I wished to shew them that they would secure a much larger return by such improvements, than they could derive from buying railway shares."

If any one thinks that I have unjustly accused the landed interest of not performing their share of the contract which the protection granted them by the corn laws, in my opinion, demands, viz.—"using all their endeavours to increase the produce of the soil, and encouraging every measure having that for its object," I point to Lord Ducie's example, and say, that this splendid exception proves my case. To those who have the means, I say, go and do likewise; those who have not, have at least influence, which they may exert to obtain "an act for enclosing all the waste lands in the United Kingdom." RUSTICUS.

ON THE PREVAILING DISTEMPER AMONG CATTLE.

BY HUGH FERGUSON, V. S.

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A period of nearly three years has elapsed since the first appearance in this country of a peculiar epizootic among horned cattle, the chief characteristic of which was a pustular affection of the mouth, nose, and feet. Previous to being observed in Ireland, it had existed for some short time in the sister island—England, to which, like many epidemic diseases of the human species, it had travelled from the far east by a rather circuitous route, traversing both shores of the Mediterranean, and then committing sad devastation among the herds of cattle in Spain, France, Switzerland, Holland, Belgium, Bohemia, Hungary, and Prussia, before it became the unwelcome visitor of the British islands. Fortunately, this disease was short in its sojourn, mild in its effects, and extremely easy of treatment, especially in cattle; yielding to the simplest remedies, and often to the unassisted efforts of nature. The property of its being capable of being imparted in a mild form to sound animals by inoculation, was a fact which I discovered while attached to one of the Continental Veterinary Schools. It proved a means (where the expedient was had recourse to) of guarding against those immense losses which invariably befel to sheep farmers, where it attacked their flocks during the lambing season. Like the small pox, in the human subject, ruminants were scarcely ever attacked a second time with the pustular distemper. Therefore, by inoculating the ewes some time before the lambing season, the disease was favourably passed over before that period arrived when any infectious derangement in the mother generally proved fatal to her offspring. Unfortunately, although the pustular disease was so mild in its effects on every description of animal it attacked, lambs excepted, it was in all countries which it visited, merely the precursor of one of the most fatal forms of distemper that has been known to exist within the present memory of man. The distemper to which I allude is that which at present reigns with sad mortality through almost every county in Ireland. It has now been in this island nearly eighteen months, during which time the fatality among neat cattle has been, in a proportion of twenty to one, greater than at any former period.

The present form of distemper, unlike the pustular one which preceded it, is neither infectious or contagious. Its principal seat is in the organs of respiration, particularly the lungs, their covering, the lining of the ribs, and the membrane lining the numerous divisions of the wind-pipe which convey the air to the different parts of the lungs (lights) in breathing. The manner in which the lungs are affected is not similar to any other affection hitherto known. The disease seems first to commence in the lining membrane of the air tubes and cells forming the greater bulk of the lungs. Inflammation is set up in this membrane, and instead of its increased secretion being of a mucous character, such as man "spits" or "coughs up" when affected with a severe "cold," it becomes changed to a plastic or adhesive character, being formed from that portion of the blood called its lymph, or the matter with which nature principally forms new parts and repairs any losses that may occur to the frame. This lymph, when it becomes secreted in the air tubes and cells of the lungs, remains there, from its adhesive or plastic qualities causing it to adhere to the parts so very strongly that the animal cannot expel it in the same manner by coughing, as she would dislodge an accumulation of mucous from the bronchia. Generally only the lungs of one side of the chest are at first affected. If those of both sides are attacked at the same time, death shortly takes place from suffocation. Lymph becomes deposited also in the other parts which I have mentioned as the seat of disease, especially the fabric of which the lungs are composed. In some cases the cavity of the chest, on one or both sides, is filled with water; when this happens the case is almost hopeless. The exciting cause of all these changes, and of every epidemic or epizootic disease, appears to rest in some peculiar state of the atmosphere. Yet of what this peculiarity consists we have, in the present state of science, no means of deciding. We cannot, by the most minute analysis, detect the slightest difference in the component parts of the air in which we well know, from deductive reasoning, the subtle poison lurks--of which, perhaps, man, with all his powers of investigation, even strengthened by future discoveries, will never be able to take cognizance—excepting through the medium of the disastrous effects which it produces, not alone on those animals that he has made subservient to his use by domestication, but also on himself. To some this may appear an object of wonder, when they consider the great and wonderful discoveries that have been made in the scienec of chemistry? But is it more astonishing than the fact of the air of a chamber strongly impregnated with a perfume (musk for example) of which we are made immediately aware by our sense of smelling, evading the detection of any addition to its usual component? If a quantity of musk be weighed after its having remained for years in an apartment, it will not be found to have lost any appreciable quantity of its original weight, although the air of the chamber will have been strongly impregnated with the perfume during the entire period of the time which the musk may have remained in it. The ablest chemist cannot detect the existence of the particles of perfume in the air through the medium of any other analysis than the test with which he is supplied by bountiful nature, namely—his nose. This fact is offered as a beautiful example of the superiority sometimes evinced by the powers of instinctive nature over those resulting from an artificial acquirement. In the same manner the miasma or poison of the atmosphere is detected by its producing specific effects on different organs and tissues of the living frame. Granting the position, that the exciting causes of some epizootic and epidemic diseases rest in the air by which those affected are surrounded, the question naturally suggests itself—how does the vitiated atmosphere produce its effects? Is it by coming merely in contact with the part affected, or is it through the medium of respiration that the blood becomes affected, and then in its circulation disseminates the noxious principle it received from the air throughout the entire system, to exert itself on the different parts susceptible of its action? By those unacquainted with the science of medicine it may be asked—what is the reason that every portion of the animal is not affected, all parts being supplied with the same blood, every drop of which, according to the explanation just given, must have been equally impregnated with the noxious principle as it passed through the lungs in the function of respiration? This question, I apprehend, is one of much easier solution than may be possibly imagined. It is fully answered by admitting that for anything to be acted upon by an agent it requires to possess a certain degree of susceptibility. Thus, if half-a-dozen sticks of sealing-wax were placed beside each other, one or more of them being heated, and then all the six exposed to pressure, by passing a roller having a pattern cut on it over them, it will be found that only those that have been rendered susceptible by heat will receive the impression, although they all have been exposed to the same degree of pressure. The same principle may be applied to the animal frame, which is a most complicated piece of mechanism, composed of a variety of parts having different characters and degrees of susceptibility. The subject admits of a still more scientific explanation. It is universally admitted that the cause of epizootic disease is generally an ærial poison. It being a poison of this character we can recognize it only through the medium of its effects; nevertheless, in this instance, satisfactory deductions can be drawn from analogical reasoning. There are many tangible forms of poison, which, no matter how taken into the system when destructive to life, produce the same specific effects upon certain parts. Arsenic, when applied even to the external surface with fatal effect causes inflammation and ulceration of the stomach. Tartar-emetic, when injected into the veins, excites most violent vomition, an effect precisely similar to that which takes place from its being administered internally. These facts clearly prove the extraordinary susceptibility of some parts to be acted upon by certain agents. With respect to epidemic and epizootic diseases, to use a chemical term, there are some parts of the frame which have a much greater affinity for the diseasing principle than others, the product resulting from their combination being the disease. This mode of explanation, although extremely figurative, is yet the most expressive that suggests itself to my imagination.

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(To be continued.)

THE TURNIP FLY.—It may appear somewhat remarkable, but it is a certain fact, that rabbits which are in the habit of feeding upon field turnips which are affected by the turnip fly, contract a vermicular disorder, which appears to have escaped the notice of the most accurate observer of nature. The worm generated by the fly, which is a *tanthredo*, must it would seem, be deposited in the shape of *ova* in the plant, and in that form be taken into the animal's stomach. The writer of this, when residing at Shipton Bellinger, near Andover, had a very fair opportunity of investigating this fact. There was a belt of furze of about five acres which verged upon a turnip field, the latter being exceedingly troubled with the turnip fly. This furze was a warren for rabbits, and not one coney out of some scores that he killed from time to time was exempt from these "vermiculi," which had in many instances eaten their way into the hepatic lobes of the creature, proving ultimately thereby destructive to many of them at a certain season of the year. The worm is a short white flat worm, about half an inch in length, and there are in some cases nine or more of these intestinal enemies to be detected in the liver of one animal. In other spots the rabbits after being shot were found to be perfectly free from the above malady. How far sheep may be affected in feeding upon a similar vitiated diet, the writer has never been curious enough to inquire, but an inference may be drawn from what he has stated in the case of the rabbit, which may upon inspection be found to apply to the former animal, as the latter is exceedingly liable at seasons to hepatic ailments.—*Times.*

LIVERPOOL, SEPTEMBER 1.

The following tabular statement will be found to exhibit the quantities of Wheat, Flour, Oats, and Oatmeal imported into Liverpool during each of the last twelve years—the year being considered to terminate, as respects the corn trade, with the month of August;—the several quantities of foreign Wheat, Flour, and Oats which, by payment of duties, have been released for home consumption; the stocks, free and in bond; and the range of prices at the close of each term of the series. The free stocks are as deduced from careful estimates; those in bond as made up from the Customs' daily Bill of Entry.

	WHEAT.								FLOUR.							
	IMPORTS.			Foreign & Col. duty pd.	Home vend.	Exportd Foreign.	STOCKS.		IMPORTS.			Foreign & Col. duty pd.	Home vend.	Expor d Foreign.	STOCKS.	
	British. Qrs.	Col. Qrs.	For. Qrs.	Qrs.	Qrs.	Qrs.	Free Qrs.	In bond. Qrs.	British. Sacks.	Col. Brls.	For. Brls.	Brls.	Sacks	Brls.	Free. Brls.	In bond. Brls.
12 mo's endg. 31 Aug. 1831	266649	93422	336026	327520	614169	4350	110000	97545	80026	20285	675834	405220	461630	36499	50000	254400
Range of prices on do do	7s 3 9s 9 6s 6 - 8s	8s 3-9s 3		7s 3-9s 9				5s 9 - 7s	46s-48s 41s-45s	33s-35s		34s-37s				21s-24s 6
12 mo's endg. 31 Aug. 1832	418454	49958	44537	14400	197854	43477	45000	134166	164007	33001	66192	24570	216206	65453	noml.	263570
Range of prices on do do	8s - 9s 6 6s 10-8s 6	6s - 9s 4		7s - 9s 6				4s - 5s 9	48s-50s 46s-49s	30s-34s		32s-34s				15s-23s
12 mo's endg. 31 Aug. 1833	459802	45728	9078	74900	479702	8902	100000	105170	288938	25598	12940	39440	296546	77481	Sacks 20000	185187
Range of prices on do do	8s - 9s 6 7s - 8s 6	8s 2-9s 4		7s - 9s 6				5s - 6s	45s-47s 43s-45s	33s-35s		34s-36s				19s-27s
12 mo's endg. 31 Aug. 1834	393812	31454	47652	31700	365512	50592	160000	101984	258092	27833	30433	27900	267622	81786	30000	133767
Range of prices on do do	6s - 7s 6 5s - 6s 3	6s 6-7s 4		5s - 7s 3				3s 9 4s 6	38s-40s 33s-37s	27s 28s		30s-32s				18s-27s
12 mo's endg. 31 Aug. 1835	296775	19731	16830	none	326775	20854	130000	117691	276323	5608	7941	none	286323	32235	20000	115031
Range of prices on do do	5s 6-6s 8 5s - 6s	6s - 6s 4		5s - 6s 6				3s - 4s 3	36s-37s 30s-35s	25s-28s		25s-30s				19s-26s
12 mo's endg. 31 Aug. 1836	327103	105	58789	none	317103	35872	140000	140713	294591	1012	52741	none	304591	74247	10000	94587
Range of prices on do do	6s 10-8s 5s 9-7s 4	6s 9 - 7 4		6s - 7s 9				4s - 4s 10	40s-42s 35s-40s	28s-30s		..				22s-25s
12 mo's endg. 31 Aug. 1837	191925	472	129512	8231	270156	98603	70000	163893	229967	16006	61785	16006	241173	87770	10000	68602
Range of prices on do do	6s 10-9s 5s 4 7s 4	7s 9-8s 6		5s 6-8s 10				3s 6-4s 6	43s-47s 38s 45s	30s-32s		..				19s-22s
12 mo's endg. 31 Aug. 1838	215668	..	104494	51374	322042	68236	15000	148777	336854	9049	52885	13119	346040	56506	10000	60911
Range of prices on do do	10s-11s 6 9s - 10 9	10s - 11s		9s 6-11s 3				8s 6-10s	60s-63s 52s-60s	40s-42s		..				34s-40s
12 mo's endg. 31 Aug. 1839	228797	..	508071	594410	748207	1225	90000	61213	152628	17261	212893	251104	331609	23890	4000	16071
Range of prices on do do	9s - 11s 6 8s - 9s 9	..		7s 6-11s 3				7s 6 - 10s	56s-57s 50s-56s	..		32s-40s			Brls 4000	30s-34s
12 mo's end. 31 Aug. 1840	215689	500	367189	295530	576219	164	25000	133208	54105	49908	459394	362598	311224	31096	5000	131679
Range of prices on do do	7s - 10s 9 5s 9-8s 10			8s - 10s 4				7s 3 9s 3	53s 55s 40s-47s	33s-34s		32s-35s				28s-32s
12 mo's end. 31 Aug. 1841	222693	29603	229936	269286	501979	†2544	15000	120917	81213	220080	235973	415860	339815	†31775	1000sk 50000b	140097
Range of prices on do do	9s 6d-11s 8s 3d-9s 9			9s 3-10s 9				7s 9-9s 6	50s-56s 48s-54s			35s-38s			sweet & sour	33s-34s
12 mo's endg. 31 Aug. 1842	172365	21384	653637	790250	597615	†8688	380000	none	65947	221939	180505	520752	360474	†12773	1000 150000	9016
Range of prices on do do	7s 6 - 8s 6 5s- 6s 6d			4s 9 - 8s 6					40s-4[illegible]s 39s-42-			25s-28s 6				22s-24s

	OATS.							OATMEAL.		
	IMPORTS.		Foreign Duty paid.	Home vend.	Exportd Foreign.	STOCKS.		Imports. British.	Home vend.	Stock Free.
	British. Qrs.	For. Qrs.	Qrs.	Qrs.	Qrs.	Free Qrs.	In bond. Qrs.	Loads.	Loads.	Loads
12 mo's endg. 31 Aug. 1831	391750	67253	48700	470450	..	20000	18553	133886	153886	noml.
Range of prices on do do	3s 1-3s 2		2s 10 3s3				1s 9-2s 4	21s-26s		
12 mo's endg. 31 Aug. 1832	460532	2785	3660	444192	..	40000	17678	180410	135410	45000
Range of priees on do do	2s 5-2s 6		2s 4-2s 5				1s 3-1s 6	21s-22s		
12 mo's endg. 31 Aug. 1833	368357	80	none	358357	6878	50000	10580	208468	183468	70000
Range of prices on do do	2s 7-2s10		2s 5-2s 7				1s 9-2s	22s-23s		
12 mo's endg. 31 Aug. 1834	311766	3820	none	321766	3130	40000	11570	143375	163375	50000
Range of prices on do do	2s 6-2s 8		..				1s 10-2	19s-22s		
12 mo's endg. 31 Aug. 1835	227783	3003	none	267783	4643	noml.	9930	137020	187020	noml.
Range of prices on do do	2s 8-2s10		..				1s 10-2s 4	22s-24s 6		
12 mo's endg. 31 Aug. 1836	315364	18523	4400	309764	10497	10000	13556	193434	153434	40000
Range of prices on do do	2s 11-3s2		3s-3s 6				2s-2s 6	25s-26s		
12 mo's endg. 31 Aug. 1837	266028	41000	26440	297468	13752	5000	14364	166268	186268	20000
Range of prices on do do	2s 8-3s 2		2s 11-3s6				2s 3-3s	23s-27s		
12 mo's endg. 31 Aug. 1838	326145	20917	12340	333485	14972	10000	7969	301059	251059	70000
Range of prices on do do	3s 5-3s 7		3s 2-3s10				2s 6-3s	26s-27s		
12 mo's endg. 31 Aug. 1839	290995	26921	26843	324838	8047	3000	none	213107	280107	3000
Range of prices on do do	3s 10-4s3		3s 9-4s 3				3s-3s 6	35s-37s		
12 mo's endg. 31 Aug. 1840	257468	44259	24442	269910	6937	10000	12880	233516	226516	10000
Range of prices on do do	3s 6-3s11		3s 9-4s 2				3s 9-4s	32s-34s		
12 mo's endg. 31 Aug. 1841	269666	19749	15529	275195	4970	20000	12130	276475	251475	35000
Range of prices on do do	2s11-3s2		3s-3s 4d				2s10d-3s	24s-25s 6		
12 mo's endg. 31 Aug. 1842	197468	13403	10026	224494	7108	3000	8399	214966 Canada 5887 brl.	229834	15000
Range of prices on do do	2s4 - 2s9		2s 6-3s				1s 10-2s4	21s-23s		

Average of twelve years' imports ending with August, 1841 :—Barley, British, 56,187 qrs.; Foreign, 4,542 qrs. Rye, British, 1,071 qrs.; Foreign, 4,406 qrs. Beans, British, 19,216 qrs.; Foreign, 31,957 qrs. Peas, British, 3,754 qrs.; Colonial, 4,576 qrs.; Foreign, 17,173 qrs. Malt, British, 79,901 qrs.

Imports for twelve months, ending August 31, 1842 :—Barley, British, 39,360 qrs.; Foreign, 20,967 qrs. Rye, British, 1,050 qrs.; Foreign, 820 qrs. Beans, British, 12,450 qrs.; Foreign, 49,751 qrs. Peas, British, 2,850 qrs.; Colonial, 17,368 qrs.; Foreign, 26,406 qrs. Malt, British, 61,896 qrs.

Stocks, free, on August 31, 1842 :—Barley, 2,000 qrs.; Rye, 500 qrs.; Beans, 10,000 qrs.; Peas, 7,000 qrs.

Stocks, in bond, August 31, 1842 :—Barley, 9,155 qrs.; Rye, 172 qrs.; Beans, 33,938 qrs.; Peas, 17,274 qrs.

On examination of the above details it will be observed that our stock of free Wheat on the 31st ultimo (augmented by the release during the month of the whole of the foreign in the port—say 443,541 qrs.) amounted to 380,000 qrs., or nearly three times the quantity held, both free and in bond, at the corresponding period of last year, and nearly 100,000 qrs. above the largest stock held at the close of any previous term of the given series, namely, that of the 31st August, 1836, when there were free 140,000, and in bond 140,713 qrs. It must at the same time be remarked, however, that the present excess of stock is peculiar to the ports of the kingdom, it being universally admitted that the growers meet the new crop with much less than their usual quantity of old corn: and further; the range of prices on the 31st ultimo—25 to 32 per cent. below the currency at the end of August, 1841—is lower than that on any corresponding period since the year 1835-6, which had been preceded by three years of abundant production. Of Flour it is estimated the month closed with a stock of 1,000 sacks only of home manufacture, and 150,000 brls. of foreign and colonial—bearing a value 22 to 29 per cent. below the prices current for the same articles on the 31st August, 1841. Referring again to the tabular statement we will find a very material diminution in our receipts of British produce, arising in some measure doubtless from the deficient growth of the last few years, but to be attributed in a greater degree, we think, to the fact of increased consumption of bread stuffs by our countrymen on the Sister Island. The imports of Wheat thence for the past year amount only to 88,473 qrs. against a draught of 38,650 qrs. of foreign from this port.

The comparatively low prices already alluded to attracting the notice of speculators, as well as that of the country millers, we have latterly had more extensive transactions in Wheat than for some time previous: within the last fortnight numerous cargoes have been taken to hold over, several thousand quarters have passed into the interior, and the town and local millers have also purchased more freely. Quoting from the latest sales, high mixed and white runs of Danzig Wheat rate at 8s. to 8s. 6d., good mixed at 7s. 3d. to 7s. 6d., middling at 7s. to 7s. 2d., Lower Baltic red at 6s. 9d. to 7s. 9d., American and Canadian at 6s. 10d. to 8s., Ancona at 6s. 4d. to 6s. 6d., Polish Odessa at similar prices, common Odessa soft at 6s.; some Egyptian has

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* In the columns containing double rows of prices, the upper row is the range for English produce (including under the denomination, Welch, Scotch, and Manx), the under row gives the range for Irish Wheat. The prices for British Oats and Oatmeal refer exclusively to Irish.

Of the Wheat and Flour entered in the exported foreign column, (marked thus†,) the whole of the Wheat and nearly one-third of the Flour were sent under bond to Ireland and Coastwise.

been sold at 5s. to 5s. 3d.; English white may be noted as worth 7s. 10d. to 8s. 6d., red 7s. 6d. to 7s. 9d., Irish from 5s. to 6s. 6d. per 70 lbs. Of new Wheat only two or three small parcels of Irish have yet appeared; the quality in general good, in one or two cases very fine; they have brought 6s. 9d. to 7s. 4d. per 70 lbs. Flour has recently met increased demand; Canadian has sold in quantity at 26s. to 27s., United States at 28s. to 28s. 6d. per brl. Of home manufacture it will have been observed the quantity on the market is nominal—the quotations for it range from 40s. to 44s. per sack.

Our vend for Oats has been confined within narrow limits, but we meet the new crop with a very small free stock (stated at 3,000 qrs.) and with prices 20 to 24 per cent. below those current twelve months ago: Irish have recently been sold at 2s. 5d. to 2s. 9d. as in quality, free foreign at 2s. 6d. to 3s. per 45 lbs. The quantity of old Meal remaining is also light; Irish is worth 22s. to 23s., Canadian 21s. to 22s. per 240 lbs. A few small lots of Irish new Oats and Oatmeal have appeared, the former have sold at 3s. to 3s. 1d. per 45 lbs., the latter at 26s. to 28s. per load.

The quantity of free Barley remaining over is small, but of foreign there are in bond 9,155 qrs.—consisting principally of light grinding qualities, which are worth duty-paid from 3s. 8d. to 4s. per 60 lbs. A little Irish new Bere has been sold at 3s. 3d. per 60 lbs. Towards the end of May and in the early part of June last a demand for Ireland took off several parcels of Indian Corn, and put up prices of that article several shillings per qr., as high as 47s. was paid; it has since been almost totally neglected, and may now be bought at 34s. to 36s. per 480 lbs. There has throughout the season been a fair sale for Malt; the present rates for best English are 54s. to 56s. per imp. qr.

The year's receipts of home-produced Beans, it will be observed, are much below the average of those of the preceding twelve seasons, but we have had a release of 53,900 qrs. of foreign—principally in October last, when 50,896 qrs. were taken out of bond at the duty of 3s. 6d. per qr.—and the market has thus been kept abundantly stocked. Of this supply Egyptian formed the great bulk; they may now be bought at 28s. per 480 lbs.: the best foreign, European, are offering at 35s. to 36s., English at 35s. to 37s. per imp. qr. No new have yet appeared. In addition to 17,368 qrs. of Peas from Canada, 16,246 qrs. of foreign have been brought upon the free market during the season; the supply thus derived has exceeded the demand; latterly indeed there has been little or no inquiry except for grinding purposes, and the best Danzig boilers have receded in value 6s. per qr.—they may now be bought at 32s. to 34s., Canadian at 30s. to 31s. per qr.

Whatever may have been the causes which have led to the recent serious decline in the value of agricultural produce in this country—whether the prospect of a good crop, or the change in the corn laws, or these combined—it has been one of the heaviest and most rapid that we have experienced for a long series of years; and we cannot but anticipate that prices have for the present reached their minimum. It is yet too early to speak with any degree of confidence as to the productiveness of the present harvest; the Wheat plant upon strong lands is reported to have proved thin under the sickle, but the yield from the straw is said to be greater than usual; the quality of the grain is certainly good, the colour bright, and the weight unusually heavy. In speculating as to the future course of the trade, we must keep in view that the reduction in the scale for the regulation of the duties must lessen the value of home produce by at least the amount of that reduction. Joshua Walmsley and Co.

We omitted to notice in our report of the proceedings of the Richmond Agricultural Association, that amongst the other implements purchased for the service of the Society, was "Crosskill's patent clod-crusher," an implement now in very great use, and highly approved.

AGRICULTURAL QUERIES.

OF PLOUGHING.

Why is it that my tenants put four horses in a plough, which does no more work than the Scotch plough with two horses? Why are two wheels and two men employed to steady and drive, when one man holding and driving a plough without wheels does the work more efficiently? Why is the land not oftener ploughed and harrowed—more thoroughly pulverized? Can we not by taking two horses and a man from each four-horsed plough, set a-going additional implements to perform additional work?

OF MANURING.

Why are the crops of my light lands so feeble? Is there no more manure than we have got? Why do my tenants contrive to get all the liquids drained off the farm-yard, and carried away to the nearest ditch that can receive and waste them? Would the liquid not be a powerful stimulant to those fields with the light soil and the feeble crops? Why don't they grow winter food to feed cattle for the market, and carry all the manure of the cattle to the fields? When they gather the manure together, why do they always lay it up in a heap to dry and lose its strength, instead of confining it in a pit to ferment and gain strength? Why do they spread it on the surface of the ground, where it lies withered for weeks, instead of instantly ploughing it into the soil while it yet retains its power of fertilizing? Are we not surrounded by some other agencies, which a knowledge of practical chemistry might enable us to apply, in addition to the farm-yard manure?

OF CLEARING THE LAND.

Why are the crops of my tenants choked up with weeds? Were we to employ some of our workhouse poor in the fields, would not our foulness be less as well as our poor rates? Should we not give constant work to our half-employed labourers, by draining our wet lands, working the subsoil by plough or trench, cultivating good fences, feeding cattle at the stall, to economise the grass in summer, and augment the manure? Could we not raise good turnips, instead of these famine-struck patches we see everywhere around? Could we not feed more cattle by them in winter, employ more people at turnip hoeing, who would eat more food, and being more comfortable at home, acquire more steady and sober habits? Has it not been already demonstrated in other parts of the country that by cultivating turnips, especially on light soils, we need never let a field lie in fallow?

OF HARVEST-WORK.

Why do my tenants cut their crops with the scythe, rake the grain together, and load it on waggons like so much loose straw? Why do they not get more hands—from the union at Marlow, if they cannot get them any where else—and bind the corn in sheaves, and not have every field and road strewed with it in this wasteful way? If it is not possible to get people to reap it with sickles, can we not get as many as will take it up carefully after the scythes, instead of tossing it to and fro in that manner with hay-rakes, knocking out and leaving irrecoverably behind them double as much as was sown for seed?

OF THRASHING.

Why do we still throughout this county, and nearly all England, continue to thrash with the tedi ous, profitless flail? Why have we not a machine to be moved by horses, wind, water, or steam? Have we not read in the Encyclopædias (Brewster's, Loudon's), and every other instructive work on agriculture, the virtues of a thrashing machine?—namely, that "from the superiority of this mode, 1-20th part more of corn is gained from the same quantity of straw than by the use of the flail;" that "the work is done more expeditiously;" that "pilfering is avoided;" that "the grain is less subject to injury;" that "seed corn can be procured without difficulty from the new crops for those to be sown;" that "the market may be supplied with grain more quickly in time of scarcity;" that "straw softened by the mill is more useful for feeding cattle;" that "if a rick of grain be heated, it may be thrashed in a day, and the grain, if kiln-dried, will be preserved, and rendered fit for use;" that "by the same machine the grain may be separated from the chaff and small seeds, as well as from the straw;" that "the thrashing mill lessens the injury from smutty grain, the balls of smut not being broken as when struck by the flail;" and that, "were thrashing-mills used in every farm in the United Kingdom, we should have the prodigious saving of three and a half millions sterling," as computed and well authenticated by practical men, in the following figures:—

Number of acres cultivated	8,000,000
Average produce in quarters	24,000,000
One-twentieth saved by thrashing-mill instead of flail	1,200,000
Value of that at 40s. per qr.........	£2,400,000
Saved in labour one shilling per qr. —a moderate estimate	1,200,000
Total....................	£3,600,000

HAY-MAKING.

Is there nothing else to be done with the land than to let so much of it lie in grass, and take profitless crops of hay from it?

ANSWERS TO QUERIES.

ON FEEDING PIGS ON RICE.

Sir,—A correspondent enquires if any of your readers can afford him information upon the properties of rice for fatting pigs. As I have had some experience in this, I am desirous of furnishing him with the results. Several years ago I was resident in the immediate neighbourhood of London, and had a few acres of grass land. I had too a friend, a London merchant, within three or four miles, who likewise was a fancy farmer, and we used to pride ourselves upon the excellence of the breeds of our respective stocks, and our mode of feeding. We purchased, I think from the Government stores, several tons of damaged rice at a cheap rate, and with this we fatted our pigs; and such pork I never saw either before or since. The fat, instead of being loose and porous, as it frequently is, was as firm and solid as the lean, and the flavour of the meat altogether very superior. The way in which the rice was prepared for food was this. My copper held forty gallons. In the afternoon this was filled, or nearly so, with water; as soon as the water boiled the fire was raked out, and as nearly as I can remember, two pails full of rice shot in; the whole was then covered closely down, and left till the morning. On the following day the copper was emptied of its contents, which consisted of a thick jelly, which could only be taken out with a shovel. With this the pigs were fed, and the effect was what I have stated above.

As to the economy of the plan, that must be a matter of calculation, and must depend upon the price, together with the relative quantity of nutriment contained in the rice, compared with those of barley-meal, potatoes, peas, &c., though I believe but few amateurs will fat their pork upon the latter. Probably a mixture of equal parts of rice jelly and mashed potatoes would make excellent food. In fatting pigs in a small way there is one circumstance worthy of attention, that is, it is adviseable to put up two together, one larger and forwarder than the other. The master pig will appropriate to himself the choicest parts of the food, and leave the refuse for his partner, and thus between them both they will "lick the platter clean."

I am, Sir, yours,

Sept. 6th, 1842. J. B. K. Z.

DRAINING.

"A Landed Proprietor," who dates from Glasgow, June 24th, and inquires about the Agricultural Drainage Act, is informed that the act is entitled "An Act to enable the owners of settled estates to defray the expense of draining the same by way of mortgage." It is 3 and 4 Vic. 55 c. We have seen the prospectus of an agricultural drainage institution proposed to be established to carry out the provisions of this act. It is considered that the application of the large resources of such an institution, and its combination of talent and practical skill, it will hold out to landowners and lessees such a guarantee for the due performance of the work as, under the provisions of the act, must prove fully satisfactory. The same causes will also be effectual in the removal of other obstacles, and the utility of draining be developed and greatly accelerated; and thus pecuniary and other advantages will be presently realized, which otherwise would not be obtained in the lapse of centuries. If "A Landed Proprietor" will favour us with his name and address, we shall be happy to afford him any further information he may require.

Sir,—In your paper of the 29th, a correspondent wishes for information on the culture of mossy peat, or *fen land*. Peas, in the first place, I think not a suitable crop; as fen land (alias peat or moss) is much inclined *to weeds*, they would soon smother the Peas and spoil the crop.

The first principle of culture is *drainage*. When drained, pare and burn, then give it a good dressing of clay or golt; then plough it and sow with turnips or coleseed; sheep-feed it all the winter; in the spring sow it with oats, ploughed in with a thin furrow; then well trample with sheep first, afterwards with horses; then level with a heavy roller or presser. The second crop should be wheat: then plough the old stubbles, harrow them, and burn the rubbish quite clean off; plough the seed furrow, sow the wheat thereon, and trample it in with sheep till it is quite solid, then with horses until it is as hard as a path. For the next and last crop, barley, it must be ploughed deep, so as to bring up an inch or more of peat to the surface, which will, after it is harrowed and broken in pieces by the action of the atmospherical air thereon, become active soil, and by that means you will keep your depth of staple. Let it be trampled in as above, after the barley and seeds, with which it is laid down, are sown (seeds—2 bushels of rye-grass, 14 of Dutch clover, and 7 of red clover per acre). If convenient, feed it for two or three years; load it well with stock, for the more solid it is the better it will crop. Sward must not be more than three years old, then pare it, and burn, &c., as above.

AN EX-HUNTINGDONSHIRE FARMER.

Brighton, August 30th.

SIR,—In your paper of the 29th instant a correspondent inquires, "whether it is most beneficial to the following wheat crop to feed or mow the second crop of clover?" he says nothing about what kind of land it is. Upon strong clay, regular wheat and bean land, mowing is preferable to feeding; but the crop must stand till all the leaf has fallen off, then mow it for seed; the superabundance of leaf is so ameliorating to the stiff soil, that it makes it more genial to the production of wheat in correcting the sterility of the clay, and produces a greater abundance of food for the wheat. If upon light land, feeding is preferable to mowing; well stocked with sheep and all kinds of stock, the sheep penned, and the land folded all over, in addition to being regularly stocked. The wheat to be dibbled or drilled in upon a thin but well-ploughed lay or furrow, then to be well trampled with sheep, bush harrowed; then well rolled or pressed, so as to produce the greatest solidity.

AN AGRICULTURIST.

Southwick, Sussex, August 30, 1842.

EXTENSIVE SALE OF SHEEP AND SHORT-HORNS, AT SOUTH CLIFTON, NOTTS.

THE PROPERTY OF JOHN PARKINSON, ESQ., OF LEY FIELDS.

The sale of part of the improved short-horned cattle at South Clifton, belonging to John Parkinson, Esq., conducted by Mr. Wetherell, took place on Saturday last, in the presence of a large assemblage of gentlemen and breeders from great distances; the decided superiority of the stock of the far-famed bull Cossack (1880), which have on all former occasions, as well as the present, realized high prices; and the circumstances of several of the cows and heifers being in calf to Sir Thomas Fairfax, who not only won the first prize at Bristol in July last, but also at the great Yorkshire Society Show, held at Northallerton in August, 1840, easily accounts for the attendance of breeders of the first class from such great distances, all anxious to possess themselves of the blood of either the one or the other.—A most excellent luncheon was provided by Mr. Parkinson; and, after Mr. Wetherell had made a few pertinent remarks on the necessity of breeders attending to the best lines of blood, and observing, where that had been attended to, the result had been, even in the northern climates, successful, the sale commenced at one o'clock. The following gentlemen were present, viz.:—Mr. Swaffield, agent to the Duke of Devonshire; Mr. Cattle, agent to the Duke of Rutland; Mr. Newbatt, agent to the Marquis of Bristol; Mr. Hall, agent to Earl Spencer; Mr. Hill, agent to the Earl of Lincoln; Mr. Brown, agent to Lord Hastings; Mr. Brook, agent to the Hon. John Simpson; M. St. Marce, for the King of the French; Russell Collet, Esq.; L. Crombie, Esq., Aberdeen; Messrs. Sanderson and Parker, from Cumberland; Mr. Drewry, Devonshire; and a large assemblage of breeders from Northamptonshire, Leicestershire, Lincolnshire, Yorkshire, and Derbyshire.

Name.	*Calved.*	*Sire.*	*Gs.*	*Purchaser.*
Symmetry, red	1833	Commodore	31	Mr. Parker, Cumberland.
Agatha, dark roan.	1836	Spectator	37	Earl of Lincoln.
Rosemary, roan	1835	Brownlock	50	Duke of Devonshire.
Coquette, white	1836	Alamode	42	Marquis of Bristol.
Valentine, roan	1830	Juniper	34	Mr. Micklethwaite.
Blanche, white	1837	Edgar	31	M. St. Marie, for the King of the French.
Lachesis, roan	1839	Cossack	35	Earl of Lincoln.
Heifer, red and white	1842	Talleyrand	7½	Mr. Spurr.
Kaluvia, red	1839	Cossack	28	Mr. Storer.
Landlady, roan	1836	Beaufort	37	Mr. Mackintosh.
Snowberry, white	1837	Orator	30	Mr. Drewery.
Janette, white	1838	Ganthorpe	15	Mr. R. Parkinson, jun.
Laudanum, roan	1837	Clifton	38	Mr. Micklethwaite.
Molly, dark roan	1838	Columella		(not sold).
Exeter, red	1839	The Kicker	17	Mr. Drewery.
Juliana, roan	do	Bulmer	24	Mr. Micklethwaite.
Rodora, white	do	Cossack	28	Mr. Storer.
Diana, red and white	do	Harold	22	Mr. Cowley.
Matilda, white	do	Amadis	28	Mr. Coaker, Norfolk.
Matchless, roan	do	Ditto	22	Mr. T. Newstead.
Princess, red and white	1840	Cossack	30	Mr. Drewery.
Gem, roan	1839	Sandy	18	Mr. Cowley.
Sunflower, white	do	Sergeant Major	20	Mr. Brown.
Miss Dudding, red.	do	The Kicker	18	Mr. Brooke, Babworth.
Etta, roan	1840	Vivian	35	M. St. Marie.
Lydia, roan	do	Belshazzar	28	Duke of Devonshire.
Lucia, red and white	do	Cossack	22	Mr. Drewery.
Margaret, white	1841	Ditto	26	Mr. Crumbie.
Judith, red	do	Ditto	22	Mr. Drewery.
Acacia, roan.	do	Flambeau	26	Mr. Croaker.
Euryale, red	do	Cossack	20	Mr. Crumbie.
Sylvia, roan	do	Homer	44	Mr. Drewery.
Delia, roan	do	Cossack	71	Mr. Mackintosh
Daphne, roan	do	Ditto	64	Ditto.
Euphemia, white	do	Mowthorpe	19	M. St. Marie
Lalage, red and white	do	Cossack	20	Mr. Croaker.
Amelia, roan	do	Ditto	14	Mr. Spurr.
Purity, white	do	Flambeau	20	Earl of Lincoln.
Kezia, roan	do	Major	10	Mr. Laughton.
Evadne, white	1842	Lord John	12	Mr. Crumbie.
Vanity, red	do	Cossack	12½	Mr. Drewery.
Letitia, roan	1841	Brentwood	36	Mr. Smith.
Medusa, roan	do	Mowthorpe	43	Mr. Booth.
Cossack, roan	1833	Beverley	41	Mr. Wetherell.
Vanburgh, dark roan	1841	Ranunculus	50	Earl Spencer.
Mowthorpe, roan.	1835	Bluebeard	23	Mr. Burtt.
Lycurgus, roan.	1841	Cossack	33	Mr. Shepton.
Valerian, white	do	Amadis	13	Mr. Caswell.
Conrad, roan	1842	Cossack	50	T. W. Edge, Esq.
Cassius, roan	do	Ditto	36	Duke of Devonshire.
Pensioner, roan	do	Ditto	37	M. St. Marie.
Carlos, white	do	Ditto	30	Mr. Cowley.
Caligula, red and white	do	Ditto	44	Duke of Devonshire.
Kendal, roan	do	Talleyrand	12	Mr. Stafford.
Bacchus, white	do	Ditto		(not sold).
Mentor, red	do	Mowthorpe	15	Mr. Spurr.
Dion, white	do	Cossack	22	Mr. Slater.

THE FARMER.

No. 10.

On Storing and Preserving Potatoes.

There are very few persons who do not claim a knowledge of preserving potatoes during the winter, and fewer still who do not relish the eating of that useful root when properly cooked; but the *pretended* knowledge being so very general, the *real* knowledge is but seldom studied or put in practice; therefore, simple as the following hints may be deemed, they may be of service to those who will avail themselves of them.

When your potatoes are ripe, which is easily known by the haulm being withered, you should embrace the first opportunity in dry weather to dig them up with a three or four-pronged fork or spade; the fork is the best, for then you do not injure the potatoes by cutting them, as you would with a spade; besides, you open your ground better, and gather the crop much cleaner and clearer. The haulm should never be drawn up but when digging; the ground being loosened, the small potatoes come up with the haulm, and may be gathered and kept for seed, or used as food for pigs, horses, or cattle, which will amply repay the extra trouble; whereas when the haulm is forcibly drawn up, the small potatoes are torn off and lost; being left in the ground, they either rot after a frost, or become an annoyance by their growing up in the following spring, to the injury of any crop that succeeds them. Where there are large quantities of potatoes grown, the plough is sometimes used in drawing them, but the plan cannot be considered a good one nor economical, for it requires nearly as many hands to gather them after the plough as would be employed in forking them up; and of necessity the plough buries a great many in turning others up, and all those buried are consequently lost.

It is a good plan when digging potatoes to sort them, keeping each particular kind separate; by a little attention to this, you will soon find out the kind that retain their good qualities longest.

In storing, or what is commonly called burying potatoes, care should be taken to preserve them from wet. The too common practice of burying them in graves or pits is very improper, for thereby the water gets in, and is retained, owing to the bottom of the pit being lower than the surrounding surface, consequently the potatoes soon become rotten. To avoid which, let your potatoes be placed upon a clean spot of ground, first placing a row of turf clods on their edges all round, then another tier upon that, as you fill in your potatoes, and so on, with a gradual slope inwards to the top. When you have made your heap or bury of the required size, cover the whole with well tempered road scrapings or mud, laid on quite smooth and light, that is, not beat down hard, as is sometimes injudiciously done; for when the earth or mud is clapped or beat smooth with a spade it retains too much moisture, and the frost has a much greater power on it than when it is lightly put on; or, instead of earth or mud, you may thatch it with straw, which is a good preventative from frost. Then dig a trench or gutter all round the bury to carry off the rain water; if the work has been properly executed, your potatoes will always be dry and well preserved. If your heap be large, it will be advisable to throw in a moderate quantity of dry earth or sand to prevent the potatoes heating, and losing their flavour.

If you have the convenience of keeping your potatoes within any building, they should be buried in dry sand, being a much better preservative than straw. Potatoes with straw only, generally turn yellow, become withered, and lose their flavour, but if buried in dry sand, are always fresh and sweet; the sand protects them from the air and frost, and they are easy to be got at in all weathers.

In spring, when the potatoes begin to sprout, it is advisable to take them out of the sand, rub off all the sprouts, and spread them on a cool dry floor; to check the vegetation they should be frequently moved or turned, and spread out as much as possible. By adhering strictly to this plan potatoes may be preserved sound and good flavoured for months, as has been proved by many years' practical experience.

A great deal of good potato seed is wasted every year for want of care, which when, potatoes are scarce and high in price, is much to be regretted. In preparing your potatoes for the pot, cut off the top or crown of every large potato, for therein is the principal seed for future growth; the rest, being the largest portion, is equally good for food, and the small potatoes, about the size of a pigeon's egg, or a small hen's egg, are the best for seed, but the most wasteful for boiling. These, being sorted out in storing, would insure good seed for the spring, but they must be planted whole, intermixed with the tops of the large ones. As potatoes do not arrive at perfection until the second or third year, the planting of very small ones is injudicious, and should never be done, excepting in times of scarcity, when seed potatoes are very dear. When small potatoes that have not come to full perfection are planted, the return is very unsatisfactory; for although the crop may be numerous, the bulk is small and the expected measure deficient.

September, 1842. Delta.

CALENDAR OF HORTICULTURE FOR OCTOBER.

Fruit Department.

The operations of this month should be noticed as they present themselves, in point of order. *Fruit gathering* and storing must then be particularly attended to, because, from the peculiar character of the summer, apples and pears are early; in fact, we observed some of the fine Flemish pears as actually ripening on the trees by the third week of September. All fruit should be gathered in a dry and rather sunny day, and be immediately laid up in an airy but very secure room. Jars, and other vehicles for deep packing, may answer in the hand of curious and watchful persons, who can examine and select the store, so as never to permit one decayed subject to lie in contact with a sound one: but for persons whose time is fully occupied, a good shelved apartment, facing the north or east, latticed and airy, where each variety of apple and pear can be assorted and lie in single strata, affords the readiest means of investigation and general security. The finest pears which never mature on the tree, should, however, be deposited in a dry room, where fire may occasionally temper the air and prevent damp.

Every one remarks that fruit, though abundant, has fallen from the trees to an extraordinary degree; and it appears, also, that apples do not ripen regularly. As in the case of the spring corn, so the great solar heat has not produced the expected results with fruits: the crops "turn off" fitfully, and in the late vinery we notice unusual failure of the Muscats and Frontignacs; the berries decaying suddenly, collapsing in a few hours, or becoming entirely mouldy. Some *meteoric* agency, not identical with the direct solar ray, is not in its accustomed regular operation. Electricity, or natural galvanism, is, we suspect, the power which regulates, retards, or hastens the maturation of fruits. It operates through the decomposition of water, by which all the other electro-chemical affinities are induced.

We never recollect a season wherein trees and shrubs have been so consistently verdant, clean, and healthy. Insects have scarcely touched the foliage, yet the fruit falls. But though foliage is perfect, wasps, blue-bottle flies, and other predatory vermin have been awfully numerous; hence our wall-fruits have vanished with great rapidity, and very few have escaped injury in some form.

Peach and nectarine trees ought not to be nailed close, or pruned back at all now; but where there are very strong shoots which have pushed secondary laterals, each such shoot, if not wanted, ought to be cut quite away; or if wanted to fill a vacancy, to two of the best seated, lower laterals, which may thus become fruitful.

Fig-trees must be trained close, and in regular order, prior to interlacing the branches with spray of the spruce fir. Prune no tree, excepting the *vine*, till the turn of the year, and rather prefer to leave the younger branches of the best wall-trees at liberty, than to confine them. Lightly hoe all the soil of the fruit-borders; mulch over the roots and plots of the berry-bearing shrubs; lay leafy manure, two inches thick, over the soil, after moving the surface and destroying the weeds.

After the third week of October, plant every kind of fruit-bearing tree, placing a good stratum of new, chopped, turfy loam in a free open state, under, among, and over the roots; then water and stake the taller trees.

A vine, the crop of which is taken, and the leaves changed colour, cannot be too speedily pruned and secured to the wall.

The claret vine has dark red leaves; these yield a beautiful crimson tint by infusion in water, and much flavour; the fruit also is exactly of the quality to produce a fine light, red wine: both together would make a very nice substitute for foreign claret, at the cost of 6d. per bottle. A little experience would prove the fact.

FORCING DEPARTMENT.

The *succession pine-apple plants*, having been finally re-potted for the winter, must be kept at a less, but still ample, growing temperature. Dung-linings will still be sufficient; but each pit ought to be provided with a well-acting range of hot water pipes, the boilers in clean condition, and ready to be in service at an hour's notice. Snow, ice, and seven degrees of frost, are not strangers in October.

The *fruiting pines* for the supply of the table from May to August, should be placed in a pine-stove, abating water gradually, and at length only "dewing" the leaves by the syringe about sun-set. By the end of October the soil of the pots may be nearly dry, and the temperature of the house reduced to a little below 50 degrees at nights. Frost, however, must on no account approach the plants; but as during growth any check is mischievous, so when they have attained a fruiting size, it is important to arrest growth by the means of cool temperature and a dry soil; otherwise a house of pines cannot be brought simultaneously into a fruit-bearing temperament. Pines will, it is true, produce fruit without a check; and where a few only are required to drop in, as of their own accord, nature may be left to act for itself; but where a stock is required, means must be applied to produce general fertility. Thus, then, it is usual to keep a house of large pines dry, cool, and with no bottom heat, from October to Christmas; always providing against a temperature much below 50 degrees, or a very damp atmosphere.

The *early vinery* must be attended to, for the wood is ripe. Prune and spur very close, and expose the shoots to the atmosphere for a month, either by removing the light or by withdrawing the rods through some opening in the house, and training them on a temporary trellis. Keep the late vinery dry, giving air at sunny intervals, and lighting a little fire in wet and cold evenings. West's St. Peter's grape is admirable as an abundant and rich late fruiter.

VEGETABLE DEPARTMENT.

In the first week *sow* small salading, hardy lettuce, radish, and, after the middle of the month, early frame Cormack's Kent (the "May") peas, and mazagan beans.

Transplant, early, the main crop of spring cabbage; the work should not be delayed, and the ground ought to be rich, particularly if a bed or plot be intended; because by freely manuring now, an excellent preparation is made for the early potatoes of next year.

Asparagus beds and rows may be dressed so soon as the haulm is yellow. Cut that down to two inches of the surface, remove it to the vegetable heap to rot; sweep away any fallen seed, and carefully weed the soil; then coat it with so much decayed leaves as will fully bury the stubbs of the haulm.

Artichokes do not benefit by the old treatment of "landing up;" new annual plantings are to be preferred. The good plants furnished with suckers must, however, be cared for; and this is effected sufficiently by removing weeds, hoeing the soil and laying it in close position about the plants, and covering it a yard round each plant with saw-dust, or fine ashes, if the land be naturally stiff, and leaf-mould.

Dig a supply of carrots, parsnip, beet, and Hamburgh parsley; also, all the ripe potatoes—the dryer the soil the better. Potato-store, after the tubers are dry, should be housed in a cold, dry situation, but from which light and frost can be excluded; avoiding damp, fermentable materials.

Earth up celery, after finally tying, loosely, each plant with a strip of bass. Collect the dry soil close around, but never over the growing heart-shoots. Tie *endive* and earth the plants; clear the land of weeds, hoe among crops, and maintain a strict attention to order and neatness.

ORNAMENTAL DEPARTMENT.

Mow lawns, roll them, and gravel walks, weed and move the surface of shrubberies prior to the fall of the leaf: clip hedges, and prune away superfluous shoots of trees and shrubs, but never mangle them with shears.

Pinks, well rooted, may be planted in beds, and carnation layers in pots; a good soil is, road drift, decayed cow-dung, and free turfy loam, equal parts, *Auriculas* in pots ought to be protected from dashing rain, and the decayed leaves sealed off. Prepare the borders or beds for tulips, hyacinths, crocus, narcissus, and other bulbs; a free turfy loam, with river sand, is capital for all: as likewise for bulbs in pots, which should soon be got ready, prior to excitement in the flower house.

Perennial herbaceous plants may be divided, and re-planted in other sites.

Cut away all littery stems, and remove forthwith every tender plant which it is intended to preserve. Protect, by some shade, the best blooms of the dahlia, and also the flower stems of the chrysanthemum. The latter plant is beautiful in a fine, early, and sunny season; but in most instances it is received by the first part after rain. In pots, protection is readily effected; but this plant prospers most in the open air, for it is perfectly hardy. Of late years our gardens have lost all the beauty derivable from the numerous varieties, and consequently persons abandon their cultivation.

GREENHOUSE AND PITS.

All the geraniums ought to be in the former, and most of the hard wooded plants in the latter. *Camellias*, however, should be by themselves, in an east aspect, protected from frost, but nothing more. The soil in the pots ought to be barely moist: a good compost is, sandy loam, with an equal part of sandy heath mould, well mixed, and fitted closely and compactly to every part of the root. The less the earth is disturbed, the better; potting in two or three years suffices; but worms must not be suffered to exist, as they will permeate the earth in every direction.

Keep all the houses well aired, and the plants sparingly watered.

STOVE AND PROPAGATION HOUSE.

Fires must be lighted, for the heat by night ought not to be under 50 degrees, and many tropical plants require a higher temperature; but as light decreases, heat may be moderated; for we aim to protect, not to stimulate.

Gloxinias and gesneræ can be retained verdant throughout winter at 55 degrees, and it is pleasant to observe a few such plants, and compare results with others suffered to become quite torpid from drought and low temperature. A dry cellar, never under 42 degrees, is available for the latter. Plants kept thus, may revive and become very luxuriant, but many perish through decay and mouldiness.

As a caution to growers of stove plants, we would say, let the flues be clean, in a certain acting condition, and never wait till plants yellow off, but apply a little heat in good time. We have seen *Euphorbia Jacquin* flora rapidly growing on the 15th October, and suddenly paralyzed irrecoverably within a week. The caution applies to scores of plants, which would be safe at 55 degrees. Atmospheric changes are subtile; heat is but one condition; more depends upon electrical action than upon mere measureable temperature.

THE FARMER'S ALMANAC.— As many changes must have taken place amongst the Secretaries of the various Agricultural Societies and Farmer's Clubs throughout the kingdom, the Editors of the "Farmer's Almanac" will be thankful for any information upon the subject which may enable them to make the list in the forthcoming Almanac as complete as possible. Should any Societies have been omitted, or new ones established, a notification of them will be equally esteemed an obligation.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR SEPTEMBER.

As regards the atmospheric attributes of this month, we claim the attention of our readers under what may justly be considered favourable auspices. That it has been productive of an immense amount of benefit to the agricultural body, needs scarcely to be intimated; in fact, we may safely venture to assert, that finer and more genial weather for the prosecution of harvest work has been seldom if ever known than that experienced this season; hence, it has proceeded with a rapidity which has been highly gratifying, not only to the producers, but also the community at large. Throughout the western, southern, and midland districts, the whole of the wheat, barley, and oats have been secured in the most admirable order, if we except a few patches situate in unfavourable situations; while in the north of England, the bulk of the wheat, and nearly or quite two-thirds of the barley and oats, have reached the barns in excellent condition. As to the period at which farm labours will be generally concluded, it might with safety be stated, that it will be about the first week in October. Thus far, therefore, it will at once be perceived, matters have worked well for our farmers; and we now approach another topic of consideration, which, amongst the multitudinous opinions which have been given respecting it, we do with some degree of caution—knowing that the positive conclusion to be arrived at cannot fail to have great influence upon the future range of prices, and to determine the operations both of the producers and importers of grain. The unusually large quantities of rain which fell during the autumn of 1841 appeared, from the fact of scarcely one-third of the heavy wheats being sown in due time, owing to the saturated condition of the soil preventing that process from being carried on, even in the most slovenly manner, to work an impression—and that, too, very naturally—upon the minds of many parties, that this year's produce of wheat would, of necessity, fall considerably short of an average. This, to a certain extent, has proved true, as regards the description of corn here referred to; but then the fine tilth found in the spring of this year for all grain, aided by the strong and healthy condition of the comparatively few breadths of winter wheats above ground, together with the steady continuance of an extremely fine atmosphere during the whole of the summer months, have greatly counterbalanced the infortuitous circumstances before stated. From all that we have been able to learn, inclusive of what we have been enabled to glean from our numerous correspondents in all parts of England, we give it as our most candid and honest conviction that the actual yield of wheat this year amounts to nearly an average; but beyond that our ideas do not carry us. As to quality, this is undeniably good, and no fault whatever can be found with it; at least, if the aggregate of this country be taken into account—leaving out of the question, as a matter of course, any of those isolated cases which too often cause a doubt as to generalities. As to barley, oats, beans, and peas, the observations necessary on these heads will be very brief indeed, as they may be summed up in a very few words. Without the least fear of contradiction, we should say they are all extremely abundant, of excellent quality, and are fully realizing the expectations of their growers.

The great fluctuations which have been apparent in the prices of wheat at Mark Lane, and in the various country markets, have attracted no little attention of late, and on this head many statements have been set forth, not, in our humble judgment, positively in favour of truth: for instance, the rise and fall in figures have been attributed by some to a falling off in this year's growth of wheat, by others to the large arrivals from abroad, and so forth. Throwing aside garbled and otherwise inconsistent statements, we will venture, or rather endeavour, to throw out such hints as may perchance prove serviceable. It will possibly be remembered, that in several previous reports we have stated it to have been our opinion that quotations would fall to their present, or even a lower level; and this, too, in opposition to many other writers on agricultural subjects. Our statements were deduced from the prospect of a fair crop, and overwhelming supplies of foreign wheat which would be brought into our markets duty-paid. All this has happened to the very letter, and what will be the result it is now our duty to inquire. The value of wheat, and indeed that of all other grain, has suffered a ruinous depression, as will be the more readily perceived if a comparison be made between those now realised with those obtained at the corresponding period last year; still, however, our farmers must prepare themselves for even lower rates than those at present realised, and we should not be at all surprised to find the average as low as 48s. per qr. before Christmas. Now we hold good the maxim, that "Supply and Demand" are the great regulators of the value of all articles whatsoever; and when the former exceeds the latter, a heavy state of things may reasonably be expected. Now, if we take a cursory glance of our available supplies of corn, it will be found that we have more than sufficient to meet our wants, in the most defined sense of the term; and this will ever continue, so long as there are enactments in force so much opposed to the interests of the British farmer as is the new Corn Bill—the quantities of grain released for home consumption, since it has been in operation, having already exceeded 2,900,000 qrs—and this too in only twenty-two weeks. The revenue, we admit, has been materially benefited—upwards of a million sterling having been paid into it for duties alone in the course of those weeks: but the home growers must inevitably be great sufferers in the end. Let us contemplate, for one moment, the immense quantity of nearly *three millions of quarters* of corn being held over our markets, and it will at once be conceded that the future range of prices must of necessity be greatly influenced by that circumstance. From a return which has lately come under our notice, we find that, during the time the old bill was in force, *i.e.*, from the 24th of June, 1828, to the 27th of April, current year, there were 14,914,547 qrs. of wheat, including flour, of foreign produce and manufacture, which passed the customs at various imposts, and which yielded a net amount to the treasury of 4,164,800*l.* The *average* duty upon wheat for the whole of that time was 5s. 7d. per qr., under an average price of 59s. A considerable advance has taken place in the duty on foreign wheat, it being now 18s. per qr.; yet several cargoes have been entered in London at that rate. To some persons it may appear strange that corn should be entered at such high duties; but the fact is, that the warehouses in the metropolis are now so full of grain, that the utmost difficulty is found in obtaining room for fresh cargoes; consequently the importers are compelled either to clear their wheats at once, or send the vessels away to Antwerp or elsewhere, to have the grain placed in bond.

The all-engrossing topic of conversation amongst graziers and others, has been the progress of the tariff, and the effects which are likely to result from it. Regarding it we have made the most strict and anxious enquiries, and having lately had an opportunity of procuring information from English residents and others in Holland, Germany, and Spain—whence the principal portions of the supplies of stock have been as yet received for our markets—we are now enabled to throw a light upon this point. In the two former countries, we understand, beasts can be obtained in almost any number, in a middling and half-fat state, at very low prices; but, as for sheep, scarcely any are to be met with which would pay the cost of freight. In Holland pigs are very numerous, and large supplies of them may shortly be expected in this country. The great inducements by the large returns, in the shape of positive profit, made by some of the judicious buyers of stock at Hamburg and in parts of Holland, have produced an incentive for others to enter into these speculations; and we learn there are numbers of jobbers and others at this time abroad buying very largely. In support of our position as to the amount realised, we will instance the actual purchase of 100 beasts at Hamburg, on the 15th instant. 50 of them were sent direct to London by a steamer, and the account, at the close of the transaction, stood thus:—

	Per Head.		
Average cost at Hamburg..........	£8	10	0
Expenses previous to shipment	0	5	0
Freight to London................	2	0	0
"Slinging," and wharf duties......	0	6	0
Duty	1	0	0
Expenses here	0	10	0
Actual outlay......	£12	11	0

The stock in question we saw sold at an average of 15*l.* per head, thereby yielding to the importers a positive gain of *two pounds nine shillings per head.* The remainder of the beasts was brought by way of Hull, as an experiment, and we herewith present our readers with an account, for their information, of the shipments thus made:—

	Per Head.		
	£	s.	d.
Average cost at Hamburgh	8	10	0
Expenses previous to shipment	0	5	0
Freight to Hull	1	0	0
Expenses at Hull	0	1	6
Freight to London from Hull	0	15	0
"Slinging," and wharf dues here ..	0	6	0
Duty under the Tariff	1	0	0
Expenses here	0	10	0
	£12	7	6

The numbers of beasts imported into London in the course of the month have been about 400, and the latter arrivals have exhibited a decided improvement; still, we are far from supposing that any really fine stock can be received from abroad for some time to come, at least, under existing circumstances. At the outports nearly 1,000 head have, we understand, been imported and sent to the various inland markets. On Monday the 24th, the "Countess of Lonsdale" steamer brought over from Hamburgh 40 beasts, 100 pigs, and 80 sheep—the latter being the first importation into this country; but they were in such poor condition as to command very little attention, though they were offered as low as 28s. per head. Of Dutch hogs we have received nearly 200, and they have met a steady inquiry, at prices varying from 2*l.* 15s. to 3*l.* 5s. each. That the new tariff will have the effect of materially reducing the value of stock in this country, we entertain not the least doubt; and, on reference to the prices obtained in Smithfield and elsewhere, it will be found that they are fully from 2d. to 4d. per 8lbs. lower now than in September, 1841. At the large annual fairs and trysts also, the trade has proved excessively dull, and sales have not been made except at miserably low rates; most of the dealers, doubtless, looking forward to a further reduction in the value of both beasts and sheep.

From our grazing districts we learn the epidemic has again appeared amongst the stock, though not to say in a very violent form, and very few losses have been sustained. Both beasts and sheep, owing to the plentiful supply in the pastures caused by the late rains, have fared extremely well.

The turnip crop is highly spoken of, and a good winter's supply of food is looked forward to. Hay, however, in some parts is selling at high rates, on account of the limited quantity secured this year. Potato raising is now about to command the attention of the growers, and it is the generally received opinion that the produce of that excellent and valuable esculent will be abundant.

In the month's early part, a considerable improvement took place in the value of both English and foreign wheat, with a brisk enquiry; but, since the 15th, the demand has fallen off, and the prices have declined quite 6s. per quarter. In all other kinds of corn but little has been passing worthy of particular observation. For other articles there has been a slow inquiry, and the quotations have undergone no material fluctuation.

Throughout Scotland the harvest has progressed most favourably, and about three-fourths of the grain have been already stacked. The produce of the flail is represented as good, with excellent quality. The corn trade has ruled slow, and the prices have somewhat declined. Many complaints have reached us of the unusually low prices at which store stock is selling.

Our advices from Ireland are cheering. Most of the corn has been got in, and those portions of it which have been thrashed out have fully realized the expectations of the growers. Large quantities of new wheat have been on offer in the various markets. Trade, however, has proved dull, at rather easier quotations.

The following is our usual monthly statement of the supplies and prices of fat stock exhibited and sold in Smithfield market. The former have comprised 11,850 beasts; 172,460 sheep and lambs; 800 calves; and 2,212 pigs; while the latter have ruled as follows:—Beef, from 3s. 2d. to 4s. 6d.; mutton, 3s. 4d. to 4s. 8d.; lamb, 4s. to 5s. 2d.; veal, 4s. to 5s.; and pork, 4s. to 5s. per 8lbs. to sink the offals—this, it must be understood, is an average for the four weeks.

The numbers of good saleable beasts and sheep on offer having been small, the demand for them on each market day has ruled firm, but other kinds of stock have been dull in sale. The arrivals from our northern districts—such as Lincolnshire, Leicestershire, Northamptonshire, Warwickshire, &c., have been seasonably extensive; they having consisted of nearly 8,000 short-horns and runts. From other parts of England they have been fair, and of good quality; but only about 100 horned and polled Scots have been received, by steamers, from Scotland. As we have entered fully into the importations of cattle for this market in another portion of this article, we refrain from detail here.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, Sept. 27, 1841, and Monday, Sept. 26, 1842.

At per 8lbs. to sink the offals.

	Sept. 27, 1841.		Sept. 26, 1842.	
	s. d.	s. d.	s. d.	s. d.
Coarse & inferior Beasts	3 6	to 3 8	3 2	to 3 4
Second quality do.	3 10	4 0	3 6	3 8
Prime large Oxen	4 2	4 4	3 10	4 0
Prime Scots, &c.	4 6	4 8	4 2	4 4
Coarse & inferior Sheep	3 4	3 8	3 4	3 8
Second quality do.	3 10	4 4	3 10	4 0
Prime coarse woolled do.	4 6	4 10	4 0	4 2
Prime Southdown do.	4 10	5 0	4 4	4 6
Lambs	4 10	5 4	4 4	5 0
Large coarse Calves	5 0	5 6	4 0	4 6
Prime small ditto	5 8	5 10	4 8	5 2
Large Hogs	4 10	5 4	4 0	4 0
Neat small Porkers	5 6	5 8	4 8	5 6

SUPPLIES.

	Sept. 27, 1841.	Sept. 26, 1842.
Beasts	3,243	3,664
Sheep and Lambs	23,920	28,320
Calves	166	129
Pigs	487	589

Up to Newgate and Leadenhall markets the receipts of slaughtered meat from distant parts of England have been rather large, and most of the arrivals have come to hand in fair condition. Trade, generally speaking, has ruled dull, owing to the large supplies of London-killed meat brought forward at low figures. A great number of carcases of foreign beef have been on offer, but they have produced low figures, or from 3s. 4d. to 3s. 6d. per 8lbs.

ESSEX.

We are happy to report a complete ingathering of harvest in this county, and are not a little disappointed in finding our stack-yards most unusually barren of stacks—indeed it is the general remark, "how few stacks you have got this year!" But the deficiency of straw will be considerably made good by the yield which will naturally follow from the ear being pretty well filled up; at the same time we do not consider we by any means have a great crop. If we take the whole county, certainly under an average. Little wheat has yet appeared on our markets, as the price has tempted no one to sell who can possibly have avoided it. Most of our millers had laid in a great stock of foreign grain, and must have suffered severely had flour come down in anything equal to the wheat; and we do hope when they can afford it, the price of flour may bear a little more proportion to what we get for our wheat, as the price of labour is materially influenced by the price of flour. We can give no opinion as to the yield of other grain (except tares, which have turned out good), as little or nothing has been thrashed out. All the cloverseed has nearly been gathered in, and the crop appears to promise well. Turnips look well, and food of all descriptions greatly improved. This year our fairs are supplied on far more liberal terms than we have had for many years. Welch beasts certainly average 20s. per cwt. cheaper than last season, and sheep in proportion. But meats of all descriptions are selling by the butcher most extravagantly—8d. for lamb, beef, &c., while we are selling it at less than 6d. And to prove how the tariff is to assist the poor distressed people, bacon is selling at 8d. to 9d., and pork at the same price. We went into a shop, and asked why coffee was still 2s. per lb. The answer from the tradesman was, "I only get it 4d. less; others have not fell it; I don't see why I should." If the farmer is to sell cheap, the sooner he leaves off trading with dear shopkeepers the better. We have made up our minds that as long as we are to sell cheap, to buy cheap. Last season must have taught many a farmer what self-denial was, and the coming season threatens to impress still deeper on his mind that every penny he parts with must return its value. The trade may chuckle as it pleases over cheap bread, but cheap bread has a variety of meanings—*cheap provisions, cheap labour, cheap clothing*, in fact, cheap everything: and the truth is yet to be learnt by many who have been so bitter against the corn laws, that it little avails to have goods to sell unless they have customers to buy.

EAST SOMERSET.

The crop of wheat will in this district be about an average in quantity, but of very superior quality, ranging from 60lbs. to as high as 66lbs. per bushel. Barley is a good crop, and over an average in quantity and weight, but is generally high coloured. In the great oat and potato growing district of the more elevated parts of the Mendip Hills, better crops were never known; the coarser sorts of potatoes, used chiefly for rearing and feeding swine, being now to be purchased at from 2s. to 2s. 6d. per sack of 240lbs. weight. Oats are an abundant crop, and an excellent sample. Indeed the only deficient crop is beans, which, on the best lands, are below an average; and on the lighter soils will (in many instances) scarcely repay the expences of the crop, leaving the land in a very foul state. Vetches yield well; they are selling low, from 4s. 6d. to 5s. 6d. per bushel. But few peas are yet thrashed; they are well podded, and will no doubt yield accordingly. The profits of the grazier will this year be very small, as both sheep and cattle were bought in in the spring at high rates, and beef and mutton is now selling low—beef from 8s. 6d. to 10s. per score, and mutton from 5d. to 5¾d. per lb. The make of cheese of the first quality will this year be short, from the scarcity of keep which generally prevailed throughout the months of May and June; it will, however, in some measure, be compensated by the more than usual quantity now making. The prices realized for new cheese at the different markets throughout the county have been—for best coward, from 42s. to 56s.; and for skim, from 20s. to 28s. per cwt. Grass is very abundant, and the turnips are good, which will cause the general scarcity of hay to be less felt than would otherwise be the case; most of the straw will also be good fodder, as the corn is mostly secured in the best possible condition. Poor stock, both cattle and sheep, are selling from 20 to 30 per cent. lower than last year. The farmers are now busy wheat sowing, and the land for the reception of the seed is mostly in capital order; the wheat yet come up is looking strong and healthy.—*Sept.* 21.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BASINGSTOKE.—The September Annual Sheep and Cattle Fair was held on Friday, on the Common, when about 5,000 sheep and lambs were penned. Few dealers were in attendance, and those seemed reluctant to purchase except at a reduction, to which the farmer was not inclined to accede, and consequently little business was transacted. There was but a short supply of horned cattle, which, however, proved more than sufficient to meet the demand. The show of horses was small, and those of an inferior description.

LEWES ANNUAL SHEEP FAIR was held last Wednesday on Spital-hill. It was a very large fair, the number penned being upwards of 40,000. A great number of persons were present, but very little business was done; lambs fetched from 13s. to 21s., and ewes 18s. to 30s. There was a good show of lean stock, which sold under the prices of former years.

ASHBOURN FAIR.—There was a plentiful supply of cattle, considering its being a new fair. Sales were dull, excepting in fat beasts, which met a ready sale at from 5½d. to 6d. per lb. Many sheep were penned, both stores and fat, which realized about 5½d. to 6d. per lb. The horse fair was poorly supplied.

At OSWESTRY SHEEP AND PIG FAIR the supply of sheep was but scanty, but quite equal to the demand. Good mutton did not exceed 5½d. per lb.; that of inferior quality sold for less money. Store ewes and all other lean stock sold equally low. The supply of pigs was moderate, and for strong stores and fresh pigs there was a demand, and most of them were sold, but the prices were very low. Small stores and suckling pigs were quite unsaleable.

KERRY NEW FAIR, MONTGOMERYSHIRE.—This fair was well supplied with a general assortment of stock; there being upwards of 1,500 sheep, which, with the cattle, went off at a considerable advance to what could have been obtained at the preceding neighbouring fairs; the largest lot of ewes was sold to a gentleman from Cardiff, Glamorganshire; and Mr. Jacob Brown, of Shrewsbury, was the purchaser of most of the prime cattle; a number of pigs changed hands, but at a low rate; and some horses found purchasers.

LANGHOLM EWE FAIR.—This fair was well attended. There were more sheep on the hill than were ever brought forward here—numbering between 9,000 and 10,000 head. The sale was good, and almost all were disposed of, although at low prices. Ewes averaged 12s., and lambs from 4s. to 7s. each.

GLASTONBURY FAIR, held the 19th inst., was abundantly supplied with fat stock, which met a dull sale at drooping currencies: beef from 8s. 6d. to 10s. per score, and mutton from 5d. to 5¾d. per lb. The supply of lean stock was larger than usual, and not more than one half found purchasers. Lambs ranged from 14s. to 20s.; Ewes from 18s. to 28s.; and wethers 20s. to 30s. This is a noted fair for sucking colts, and the supply was about an average; the best found ready purchasers at fair prices; good two years old cart colts were also enquired after, and sold well.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF SEPTEMBER.

The decline which occurred in the value of wheat during the month of August was too rapid and too violent to be lasting, and accordingly a considerable reaction took place in wheat prices in the course of the month which has now been brought to its conclusion. In our last publication we mentioned that nothing had occurred, and that no alteration could happen in the appearance of the crop then in the fields which could in any way justify the great depreciation in the value of wheat which was then in progress. Circumstances have since confirmed the opinions which we then ventured to place before our readers. The prices of wheat, both foreign and British, during the last month, have been generally improving, and this is a natural effect arising from present appearances in the corn trade. It has always been a pleasing and universal practice for the public press to report the growing crop as most abundant, whether it be so or not, although these writers would perform a far more important duty if they examined into facts previous to reporting on them. That the quality of the new wheat crop is of a superior description, although not universally so, we are again happy to repeat, but in quantity it will prove to be below the average growth of years. The seed season was not propitious, and accordingly the plants were unusually thin on the ground; indeed, in many instances, numerous and extensive fields were not sown at all, but were left fallow until next seed-time. This state of the fields was by no means confined to particular counties, but was unfortunately but too general in almost all the large wheat districts. From a perfect conviction of this fact, we formed the opinion that the wheat crop would be an inferior one in quantity, and the present state of the corn trade fully justifies the reports respecting it to be found in our two last publications. We anticipate nothing but injury to the inhabitants of the United Kingdom from the relaxation in the corn laws, and from the late reduction of the duties previously charged on many articles of foreign production when imported here for home consumption. The rates now chargeable on wheat are protective neither to the revenue, nor to the capital, talent, and industry embarked in the cultivation of our own fields. The anti corn law philosophy, however, instead of progressing, retrogades in public estimation. During all the late unfortunate turns-out in the manufacturing districts, not one murmur has been heard against the prices of provisions. The operatives are now by far too enlightened even to fancy that the wages of labour are not generally regulated by the value of provisions, and that the object of the cotton-lords forming the Anti Corn Law Association is the reduction of wages through the medium of the corn trade, they are perfectly aware of. But they know likewise that the consumption by them of food of foreign production never has as yet, and probably never will, increase productive employment, which is the valuable property of the industriously disposed portion of the population of the United Kingdom. The four or five millions sterling, which the foreign corn districts have within the last twelve months drawn away from this country in payment for wheat alone, will never be expended here in the purchase of British manufactures, and consequently can never enhance the value of labour here. On the contrary, it is already probably invested in agricultural improvements, and in the increase of manufactures amongst those foreign nations to whom it has been remitted. Without effective protection be given to agricultural improvements at home, and to every class in the United Kingdom, in whatever department of industry our inhabitants may be employed, these public evils must be gradually and annually on the increase, and so likewise must be general distress. We have at present nearly fifteen millions of acres of waste lands, a considerable portion of which may be turned into tillage, and there is not one acre of land within the three Kingdoms, however highly it may be at present cultivated, which is not capable of still being more highly improved. We thus have the means in the greatest abundance of maintaining in food, in comfort, and in comparative independence, three times our present population, without converting the Empire into a great workshop for clothing the inhabitants of foreign nations. The free traders' doctrine certainly affords little consolation to the productive classes of the United Kingdom. The surplus of the population, however, can be more advantageously employed in the cultivation of our waste lands at home, and in the improvement of those already cultivated, than in manufacturing additional dresses for foreigners, or in their transportation to British colonies and to our foreign possessions. Indeed, emigration has been already carried to a much greater extent than it should have been, and many hundreds of persons who emigrated to the United States, and even to the Canadas, two years ago, with a little property, have returned during this summer to their native country in a perfect state of destitution. These evils will, however, gradually yield to the progress of agricultural improvements, to accelerate which nothing is wanting, or even necessary, excepting legal and effectual protection to agricultural produce, and to the products of all classes of the people, in whatever channel of industry they may direct their capital and their talents. The considerable depression in prices which had occurred during the month of August, has already, therefore, encouraged capitalists to come forward and freely to invest a part of their property in grain; and as similar inducements still exist for further purchases on speculation, we feel inclined to anticipate generally a more brisk demand for wheat during the remainder of this year, subject, however, to those occasional depressions which may arise from the operations of those needy holders and growers to whom we have previously alluded. Cheapness and dearness are purely relative terms, being solely regulated by the means to pay. What is called cheap in Great Britain, may be outrageously dear in other parts of Europe. The wages paid in Great Britain for labour cannot be afforded in Poland, nor can the prices paid here for food be afforded in any other corn producing country in the world. If the cotton master manufacturers should ever have the power in the United Kingdom to place the value of food on a level with that in Germany or in any other corn growing country, the value of the wages of labour here must speedily, from necessity, assort itself to that standard which regulates the wages paid to German boors, Polish serfs, and to Russian slaves, and a delightful change certainly will this be to the feelings of John Bull. He is, however, already perfectly aware of the many advantages which he possesses over the inhabitants of all other communities, although he sometimes grumbles, no doubt, but that generally with reason on his side. The present comparative dearness of bread, however, must soon yield to fair competition, and the price of flour must then be again regulated by the price of wheat. No law is necessary to produce this effect, for no monopoly can long exist in such an extensive trade as is that of the conversion of wheat into flour, and of flour into bread. No private capital nor private influence can for any length of time regulate the value of bread, which soon finds its price coming within the means of the consumers to pay for it, and therefore John Bull's present complaint on this subject must disappear with the cause in which it has originated. Rumours exist, and we know that in a certain degree they are not entirely without foundation, that the new wheat does not yield very kindly from the flail, and consequently that the deficiency in quantity may turn out to be more serious than it was a month ago anticipated to be. Those of the farmers, therefore, who have the means to hold their wheat for a time at all events, will not willingly part with their property at present prices, but they will take the chance of the arrival of more propitious times, when agricultural produce may again reach its intrinsic value, and when the means of the great body of consumers to pay may be increased through the increase of wages which always attends agricultural prosperity.

From the corn ports of shipment in the Black and Mediterranean seas, the letters received are in due course of post, but they communicate little news respecting the state of the corn trade of the slightest importance to our readers. The export demand in all these places is generally regulated by the prices and by the prosperity of the corn trade throughout the United Kingdom. The information then received in all the southern corn markets from Mark-lane was the reverse of being encouraging to the corn merchants, and the consequence was a perfect stagnation, particularly in the wheat trade, having occurred in all of them. At Marseilles few sales have been effected, excepting for home consumption, and prices were very much depressed, although, at the same time, considerably too dear for shipment to the English market. From Trieste and the shipping ports in the Adriatic, the state of the corn trade was of a similar description; for with the exception of beans, the produce of Egypt, no transactions of the slightest importance occurred during the whole of the last month with a view to foreign markets. From the Adriatic and from the lower ports in the Mediterranean, we may calculate on receiving from twenty to twenty-five thousand quarters of beans in the course of this and the next month. The prices paid are certainly moderate enough, but at the same time the chance of profit to the speculators is not brilliant. The information received from the north of Europe, by the regularity of steam mail packets, is even less interesting than that from the south. A general panic may be said to prevail in the corn trade in all of them. Heavy failures have occurred amongst the speculators, and the pecuniary sacrifices have been immense. The unfavourable appearances in England respecting the coming wheat crop during the last winter and spring months, were attended by large prospective purchases of wheat at prices which were perfectly unjustifiable, and the necessary result has been a great loss of money by the more daring of the speculators throughout the Baltic sea. At Dantzig, Elbing, and Konigsberg, the grain season was rapidly drawing to its conclusion, and the prices asked in all of them are now of little consequence. Early in the season the finest Polish wheats were sold at 60s. per qr. and upwards free on board, whilst now the best qualities find no buyers at 36s. to 38s. per qr. on board. At this latter price the importations here during the summer and autumnal months would have left a fair profit to the import merchants, but not more than a fair return for the capital embarked and the risk of sea damage, which almost universally attends the foreign corn trade. At Stettin, Rostock, and the ports nearer the mouth of the Baltic, the value of wheat corresponded with those prices to which we have been now alluding. They would be lower, but it has been well ascertained that, as in Great Britain there will be a deficiency found in the quantity of the last wheat crop, although the quality will in many districts be fine; and this fact, added to the prospect of the ports being soon closed by the elements, prevents any transactions of importance being entered upon. The buyers and sellers can have no object now in farther purchases or sales until the end of next spring, when no doubt their operations will be resumed, and their prices entirely governed, as usual, by appearances in Mark-lane.

The letters received from the United States of North America are dated in the middle of last month, and the information communicated by them is, in the present commercial and agricultural position of Great Britain, more than usually interesting. The crops throughout the Union are represented as being most luxuriant in quality and most abundant in quantity; and, consequently, complaints against our corn laws continued to be loudly expressed, because they, in a certain measure, protected our agricultural interest against the large supplies which, under an entirely free corn trade, we would have drawn from the surplus of the present and future American crops. No consideration was there entertained for the ruin of our farmers, did American agricultural produce supersede in our markets of consumption in any great measure that of our own growth; nor have our Transatlantic brethren even this old and stale argument of a barter trade remaining now in their favour, for the new American Tariff cultivates not the principles of reciprocity in trade. The American Government is far too much enlightened to deal in the theories of the modern political economists. Their Tariff of duties on the importation of foreign produce and of foreign manufactures into their Republic has two most important objects in view: it is, in fact, the reverse of our new rates of custom-house duties. The American law is protective of American industry of every description, and its object is also the increase of the public revenue; whilst the object of the alterations, latterly made in our commercial and agricultural policy, is to throw our markets for the consumption of every article produced in the United Kingdom and in her Colonies, open to the competition of similar articles produced by foreign industry. In the present state of our commercial laws, the information now received from America cannot be satisfactory to British and Irish live stock growers, nor to the curers of provisions. In America the supplies of beef and bacon, &c. &c., are represented as being so abundant, that they are not worth their carriage to ports for their exportation. From this quarter, therefore, we may expect to receive, in due season, an abundant supply of salted provisions, which must materially interfere with the British and Irish curers, more particularly with the latter. These American provisions will be paid for, not by any article which may give productive employment to the British people—for the duties on the importation into America of most articles, the produce of foreign nations, have been so very materially raised by the new American Tariff, that they become now nearly prohibitory—but the precious metals must be exchanged for them. In the existing state of civilization amongst European nations we are morally persuaded that in Great Britain this liberality in our trade with foreign nations cannot long be persevered in, for annually must the number of our workmen and artizans now out of employment be increased, and so likewise must be the amount of distress at present existing amongst them. The best policy for the United Kingdom under existing circumstances to adopt, is, by all means to protect the agricultural interest within the British Empire. It is far more profitable for the British consumers to pay 60s. per qr. for wheat produced at home, than to pay only 40s. per qr. for wheat of foreign growth; for in the one case the money remains in the country, giving employment to the productive classes, whilst in the other case the money is a national loss; for it is sent abroad, and is circulated amongst foreign workmen and foreign manufacturers. From our American possessions the letters are to the 18th ult. The grain crops every where were considered to be abundant, and the quality excellent. When the season arrives, it is therefore most probable that the shipments of wheat and of flour made to this country will be unusually large from those quarters, because, in addition to the wheat grown in our colonies, large quantities will be sent into them from the United States, will be there ground into flour, then shipped to the United Kingdom, and entered here for home consumption on payment of colonial duty only. In short, our trade with the United States must in future be as detrimental to the true interests of British commerce, as it will be to our land proprietors and to their tenantry. The false mercantile position, into which the free trade principles have alone placed us, must soon, however, become apparent to all by its unfavourable effects on our commercial operations themselves, and then perhaps the repeal of the present corn law, and the re-enactment of the old and patriotic one, which most unfortunately was latterly abrogated, may be applied as a remedy to our present evils. This alteration is necessary to the encouragement of industry at home, whether it be employed in commercial, manufacturing, or in agricultural pursuits; for, as matters now are, even in a trading point of view, we cannot afford to receive American flour and wheat at our present rates of duty. An alteration, therefore, in our present system becomes absolutely necessary to the restoration of commercial prosperity itself, even leaving out of consideration the propriety and national importance of encouraging the farther agricultural improvement of our own fields, and the cultivation of several millions of acres of land, in an absolute state of nature, and now perfectly useless, but which are capable of tillage, and which may be rendered in every way most important to the future strength and real interests of the British people, by rendering us, under all circumstances, independent of supplies of foreign agricultural produce.

The malting season not having yet generally commenced, the supplies of barley on sale have been limited in their amount, but still sufficiently large for the consumption. The new barleys, which have as yet been sent to market, are beautiful in their appearance, but, in many instances, they are flinty, and will require all the science of the maltster to convert them into malt of good quality; they remind us much of the silvery barleys of 1817, which were prematurely ripened under a burning sun, and the consequence in most cases was, that to produce a proper degree of vegetation, they required many more hours in the water than the excise laws at that period permitted. The maltster consequently found much difficulty in the manufacture of even the best quality of barley grown that season into malt, and we strongly suspect that when the malting trade becomes general, the maltsters this season may experience similar difficulties. We have frequently directed the attention of our readers to the many legal restrictions under which the maltsters labour in Great Britain; these restrictions are perfectly unnecessary to the due collection of the malt duties, and are exceedingly prejudicial to the barley growers and to the barley manufacturers. Without producing one advantage, either to the treasury or to the consumers of malt, they place a great obstacle to the science of the maltster, and prevent the manufacture of the various descriptions of malt which the different consumers require: these restrictions require that the maltster should be governed by the same rules and regulations, whether the weather be warm or cold—whether the barley be grown in a southern or in a northern climate—whether it be flinty or soft—whether the malt be intended for ale brewers, for porter brewers, or for any of the other various uses to which it is applied, all of which, we may say, requiring malt of different descriptions, and manufactured under different processes. The laws of excise, however, require the application of the same rules and regulations under all circumstances in malt-making, and, unless for the unproductive employment of numerous excise officers, no utility whatever can attend the present system. It is however easy enough to collect the malt duties without subjecting the maltsters and malt consumers to these absurd, because unnecessary, restrictions. The duty can be as fairly, and much more easily and cheaply levied on the raw barley itself, than it, by any possibility, can be under the present complicated system. The maltster then would be enabled to cut his coat according to his cloth; he would have the power to steep hard barley sufficiently long to produce that degree of vegetation which is absolutely necessary to the manufacture of fine malt, and to work soft barley on different principles. He would, under this alteration, have the power of making the most of all descriptions of barley which might come under his management, and every description of the extract of malt might be materially improved, did the legislature only pass an act granting these most useful and important changes in the malting trade. It is perfectly wonderful that the public attention is so little directed to the barley trade, for from this article alone from twelve to thirteen millions sterling are annually paid into the public treasury; indeed, exclusive of the dividends annually payable on the public debt, nearly one-half of the public expenditure is drawn from manufactured barley; and this article might still more extensively contribute towards the revenue, were the duties imposed on it only very materially reduced. The malt duty, for instance, is so outrageously high, that it restricts the manufacture of this most necessary and important article to less than one-half of the quantity which would be used under a more liberal and better regulated system of taxation. The quantity consumed by the common brewers is annually on the decline, for which there exists no other reason than the heavy duty charged on malt. In the same way as a pound weight at last breaks the back of the camel, so is the malt duty at present gradually extinguishing the legal manufacture of barley into malt; and thus it is consequently materially injuring the proprietors of barley fields, and their tenantry. To reduce this duty to 1s. on each bushel of barley so manufactured, would, in the course of a few years, add largely to the sum now paid into the treasury from the malt tax, and would be the most important act which the legislature could pass for the promotion of the general prosperity. Had the Chancellor of the Exchequer, and the First Lord of the Treasury, attended less to the custom-house tariff, and more to the excise duties, they would have materially advanced the interests of agriculture, and consequently those also of all classes of her Majesty's subjects. As finance matters now are, however, the ministers have a good opportunity presented to them to propose a reduction in the malt duty, without in any material manner hazarding the amount of the revenue, even in the first year of the experiment. In the statement of the annual ways and means, made during the last session of parliament, by the Prime Minister himself, he took no credit for any duty to be received from foreign grain, and consequently he made up a revenue equal to the public expenditure, without calculating on any assistance being received from this source. During this financial year, however, nearer one million and a half sterling, than one million, will be paid into the treasury by the importers of foreign grain; and as the agricultural interest feel deeply, and are deeply injured by these importations of foreign grain, it is but a matter of common justice to them that the money received as duty on foreign grain, should be applied solely to the reduction of the malt tax. This would be a beginning, at all events, of reform, and the success which would undoubtedly attend it, would encourage an extended application of the reduction of the rates of duty to all articles manufactured from barley. From one to two millions of acres of sandy soil, now in a state of nature, would be brought into cultivation for the production of the additional quantity of barley, which the alteration would render necessary. This would add largely to the national wealth, and to the comforts of the community. The profits which would arise from the increased improvement of the soil, would pay for the increased expense attending its tillage, would likewise pay well for the increased consumption of manufactured barley, and would most amply remunerate the proprietors and the cultivators of the soil, provided that their capital, talents, and industry, when so employed, received fair and at the same time sufficient protection by law, from the undue interference in our markets of consumption on the part of the foreign barley producers. Before ministers attempt any reduction in the rates of duty now charged on foreign spirits, it would be well also if they paid a little attention to the complaints of the rectifiers of British neutral spirits, for in this department of the excise regulations there is abundance of room for great improvements. Foreign and colonial spirits are admitted into consumption at any strengths which suit the palates of the consumers, and the interests of the spirit merchants. The same also is the case with Irish and with Scotch whiskey, but British rectified spirits cannot legally be sold until they be reduced nearly twenty under proof—until in fact they be rendered weaker than Irish punch. Now it is not possible, under these circumstances, for the English rectifier to compete in flavour with the best qualities of French brandies and of Dutch Geneva; and, therefore, to reduce the present protective duties on foreign spirits must be in the extreme hurtful to the important interests of the rectifiers at home. If they were only allowed to use their experience and their knowledge of distillation in manufacturing British brandies and British gin, at suitable strengths, they would send into consumption spirits far more wholesome, and of equal flavour, to any which can be made either in France or in Holland; and they would thus increase the consumption of the produce of our fields at home at the sole expense of foreign distillers, and save also a considerable sum of money now annually paid away to foreign nations in exchange for foreign spirits and for foreign wines. Under these highly discouraging circumstances, it is impossible to form any correct opinion of the probable state of the barley trade during the ensuing malting and distilling seasons, or even to guess at its future value. The barley growers have no correct means now placed before them by which they may assort their produce to the probable consumption; nor have the maltsters, brewers, and distillers, any power left to them, by the Excise and Custom-house laws, of increasing the consumption of barley by a reduction in the prices of beer and of home-made spirits. Excessive taxation is not only therefore gradually undermining the cultivation of barley within the United Kingdom, but it is also injurious in the extreme to that revenue itself, for the increase of which the heavy taxes on manufactured barley were intended and imposed. The system must be altered, for no other remedy can be applied now to this rapidly increasing evil.

In the value of oats not much alteration can be quoted since our last review of the then state and future prospects of the British agricultural interest. Upwards of one-half of the large quantity under lock at that period, and since then imported, has been entered for home consumption, but this article has been purchased too dearly abroad to render the speculations in it as yet profitable. The prices of oats declined on the average, taking improved quality into consideration, during the last month, about 2*s.* per qr., although the supplies from Ireland and from Scotland have not been large in the London market. The inferiority in quality of the importations from Ireland during the last corn season, caused prices to be taken, which apparently were under the intrinsic value of oats, and the farmers in that part of the United Kingdom have been therefore considerable sufferers in their pockets from the inferiority which existed universally in their grain crops of 1841. There is, however, a chance at present, at all events, that, during the present corn season, a certain degree of prosperity will again be the lot of Irish agriculture, although it cannot be so extensive as it would have been, were agriculture at home sufficiently protected against foreign supplies of grain in our great markets of consumption. The oat crop in Ireland this season is a most abundant one, as well in quantity as in quality, but so it is also throughout the continent of Europe. To London and all the markets on the east and west coasts of Great Britain, the supplies of oats sent from Ireland have been for many years past so very considerable, that, in a certain degree, the value of this article has been regulated and kept sufficiently moderate by this cause. The Irish farmer was, however, then most amply protected against foreign oats competing in the British markets with those of his production. He flourished in his circumstances, and through his exertions no complaints were, or could be made respecting the too high prices of oats in any of the British markets, the supplies having been generally fully equal to the consumer's demand. The improvements which have occurred in Irish agriculture, during the last quarter of a century, have their origin chiefly in the ready sale which Irish oats always experienced in the British market; and the moderate rates at which they have been universally purchased by the British consumers, are alone attributable to this progress which agriculture has made in the sister island. It is almost impossible to conceive anything more generally beneficial to every interest within the United Kingdom than heretofore has been the state of the Irish oat trade. The money paid for them remained within the British Empire, and was beneficially kept in circulation amongst the productive classes of British society, causing farther agricultural improvements in Ireland, and giving additional employment to British manufacturers. The new corn law, however, is anything but favourable to the continuation of this state of Irish agricultural prosperity for many years to come, in as far as it removes the fair protection heretofore given to the cultivation of oats within our own islands, and consequently an unfavourable check will probably be soon given to the increased growth of this most important article throughout the United Kingdom. In future it is much to be apprehended, that all the large markets on the east coast of England, from Leith to the Land's End, will be largely supplied with oats shipped from the opposite parts of the continent of Europe. From Tonningen, Emden, Bremen, Leer, and many other places of shipments, freights to Great Britain are not one-half of the sum charged from the west coast of Ireland, and the quality of the foreign oats so imported being fine, they always command the highest prices to be obtained in this country. The maximum duty now chargeable on their importation is, therefore, no adequate protection to the British and Irish producers, and a material decline in our prices indeed must occur before any effective bar can, by the new law, be placed to the consumption of foreign oats in this country; indeed prices abroad will be always lower than prices in Ireland, because the expense of production in the former is much less than it is even in the latter. The future prospects, therefore, of the oat grower in Ireland are not very brilliant at the present moment, but, as we have already said, he may at all events soon calculate on an improvement in his circumstances, although it be only temporary, in comparison with what they were during the last corn season.

The occasional showery weather which we experienced at intervals during the last month, at the same time that it did not the slightest injury to the crops of grain then ungathered, has been of much benefit to potatoes, turnips, and to pasturage. The produce of the former article is most abundant, and the quality is favourably spoken of, excepting in some parts of Lancashire, where some injury is complained of, but the cause of it is at present unknown. In the north of England, however, in Scotland, and universally throughout Ireland, a larger or a better potato crop was never grown, and the value, therefore, has been very considerably reduced—a loss which quantity will fully make good to the potato cultivator. The advantages of the improved appearance in the turnip and pasturage fields are, however, less obvious. An idea continues to prevail that a great depreciation must eventually occur in the value of fatted cattle, and consequently lean stock is at present nearly unsaleable. This is a most serious circumstance to the Scotch and Irish breeders of cattle, and equally so to the English feeders, who are unable to take advantage of the present aspect of abundance of food for their stock during the winter months. This is another strong reason against that part of our tariff which admits, on very inadequate duties, the importation of live stock and of cured provisions into our markets of consumption. For two or three years no excessive importation, however, need be feared, though after that period an immense quantity will be reared abroad, which in a very serious degree indeed must interfere with this department of British agriculture. For this year, however, and during the next, the present heaviness in the cattle trade is not justifiable; and it probably will soon be removed, when the subject is properly considered by those who are deeply interested in the promotion of this highly valuable part of our agricultural operations. Cattle cannot be grown in this country so cheaply as they are in the back settlements of America, and in every part of Europe; and without due protection, therefore, a great decay must eventually occur in this most valuable portion of the property of the landholders as well as of the farmers of the United Kingdom. It will require a few years, however, to increase the stock of cattle and swine abroad, but afterwards foreigners will forward to our markets greater supplies than can by any possibility be requisite for our consumption. It is to be hoped, however, that before long some modification will be made, as well in the corn laws as in our Custom-house rates of duty, for the proper protection of agriculture, and for the increase of commerce and of manufactures. The universal interest requires a change, and it will be soon universally asked for from the legislature, unless the Ministers of themselves see the necessity of altering the system thoroughly, and of granting the necessary relief.

CURRENCY PER IMP. MEASURE.

SEPT. 26.

	Per Qr.			Per Qr.	
WHEAT, Essex and Kent, red ..	46	55	White	54	62
Irish	46	50	Do.	48	52
Old, red	—	—	Do.	—	—
RYE, old	34	36	New....	36	38
BARLEY, Grinding 27 29 Malting	30	32	Chevalier	32	34
Irish....................	23	25	Bere-.20	21	24
MALT, Suffolk and Norfolk	56	62	Brown..	50	54
Kingston and Ware	56	62	Chevalier	63	—
OATS, Yorksh. & Lincolnsh., feed	23	24	Potato..	25	26
Youghall and Cork black	17	18	Cork, white	19	20
Dublin	17	18	Westport	19	—
Waterford, white	16	17	Black ..	17	—
Newry	21	—			
Galway 11	12	15			
Scotch feed	22	—	Potato..	24	—
Clonmel	20	22	Limerick	19	24
Londonderry	20	22	Sligo ..20	22	23
BEANS, Tick, new..............	34	36	Old ..34	36	38
PEAS, Grey....................	36	38	Maple..	—	34
White	30	35	Boilers .	32	37

FLOUR, Town-made .. 47 Suffolk 38 40 pr sk. of 280 lbs.
Stockton and Norfolk, 38 40

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	—	—			
Hamburg	—	—			
Rostock	—	—			
BARLEY	20	—			
OATS, Brew	15	17	Feed...	14	16
BEANS	20	26			
PEAS	23	27			
FLOUR, American, per brl	22	24	Baltic ..	22	—

IMPERIAL AVERAGES.

Week ending	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
Aug. 13th	58	11	27	6	20	2	35	6	34	1	34	7
20th	56	5	26	9	19	5	32	9	33	8	33	11
27th	55	0	27	3	18	7	31	6	33	11	32	6
Sept. 3rd	53	3	27	2	18	9	31	5	33	1	32	5
10th	51	6	27	2	18	6	29	4	33	5	33	6
17th	52	8	27	2	17	8	29	10	32	10	32	11
Aggregate average of the six weeks which regulates the duty	54	7	27	2	18	10	31	9	33	6	33	4
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	18	0	9	0	8	0	10	6	9	6	9	6
Do. on grain from British possessions out of Europe	5	0	2	6	2	0	1	6	1	0	1	0

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, Sept. 23rd, 1842.

	s.	d.
WHEAT	52	8
BARLEY	27	2
OATS	17	8
RYE	29	10
BEANS	32	10
PEAS	32	11

AVERAGES from the corresponding Gazette in the last year, Friday, September 24th, 1841.

	s.	d.
WHEAT	63	4
BARLEY	39	5
OATS	22	5
RYE	38	5
BEANS	45	2
PEAS	45	11

Account shewing the Quantities of Corn, Grain, Meal, and Flour, imported into the United Kingdom, in the month ended the 5th Sept., 1842; the Quantities upon which Duties have been paid for Home Consumption during the same month, and the Quantities remaining in Warehouse at the close thereof.

Foreign Grain and Flour.	Quantity imported.		Quantity entered for consumption.		Quantity remaining in warehouse.	
	qrs.	bush.	qrs.	bush.	qrs.	bush.
Wheat, from British Possessions	8498	6	8498	6	467	1
Peas, from do.	6872	4	6872	4	388	1
Indian Corn, do.	20	0	20	0	804	0
Wheat, foreign	811377	6	2086846	7	5305	4
Barley, do.	17662	2	15327	3	81266	4
Oats, do.	86327	6	93944	2	130856	7
Rye, do.	1121	6	2774	2	1368	3
Peas, do.	19570	7	41250	6	25914	5
Beans, do.	18436	7	6236	5	79169	3
Indian Corn, do.	1789	3	2209	6	5549	6
Buck Wheat, do.	....		....		....	

	cwts.	qrs.	lbs.	cwts.	qrs.	lbs.	cwts.	qrs.	lbs.
Flour and Meal from British Possessions	149290	2	24	156321	1	18	4757	0	11
Flour & Meal, foreign	92744	3	22	341781	3	0	5816	0	14

PRICES OF SEEDS.

SEPT. 26.

Linseed, English, sowing	48	56				
Baltic	—	—	crushing	42	45	per qr.
Mediter. & Odessa	45	46				
Large, foreign	—	—				
Clover, English, red	—	—	white	—	—	per cwt
Flemish	—	—	do..	—	—	nominal.
New Hamburgh	—	—	do..	—	—	
Old do.	—	—	do..	—	—	
French	—	—	do..	—	—	
Hempseed, small	35	38	large ..	46	48	
Coriander	10	16	old....	16	18	per cwt.
Mustard, brown, new	10	11	white..	10	10s 6d	p. bush.
Trefoil, new	18	22	old....	12	16	
Rapeseed, English new	31*l*.	33*l*.				
Linseed Cakes, English	10*l*. to 10*l*. 10s.					
Do. Foreign	7*l*. to 7*l*. 10s.					
Rapeseed Cakes	5*l*. 5s. to 6*l*. 0s.					

PRICES OF HOPS.

BOROUGH, MONDAY, Sept. 26.

The supplies are still very abundant, and there is only a moderate share of business doing at the following rates:—East Kent (new crop), 120s. to 147s., and some of the choice, which are but few, 160 per cwt.; Middle Kent 105s. to 135s. per cwt.; Weald of Kent 94s. to 105s., and Sussex 90s. to 96s. per cwt. The duty has advanced to 155,000*l*., and some are inclined to back it even higher.

POTATO MARKET.

BOROUGH AND SPITALFIELDS MARKETS.

Up to the Borough and Spitalfields markets nearly 800 tons of Potatoes of excellent quality have been received since our last, the sale for which, as well as other descriptions, has ruled slow at the following rates:—

	Per ton. s. s.		Per ton. s. s.
New Cornish Kidneys	60 to 66	Essex Shaws	55 to 60
Kent Shaws	45 to 60	Seconds	40 to 50
Seconds	40 to 47	Jersey Whites	40 to 49
		Devons	45 to 60

WOOL MARKETS.

BRITISH.

Down Ewes and Wethers	10d. to 10½d.
Down Teggs	11d. to 12d.
Half-bred Wethers	10d. to 11d.
Half-bred Hogs	12d. to 12½d.
Flannel Wool	8½d. to 12d.
Blanket Wool	5d. to 7½d.

LIVERPOOL, Sept. 24.

SCOTCH.—There has been a moderate arrival of the new clip, and the assortment being better, there has been rather more doing in Laid Highland Wool at our quotations. There is very little White at market. There has been less doing in Cross wool this week, but this may be accounted for by the dealers having supplied themselves freely previously. There is a little doing in good deep grown Cheviot wools of good quality.

	s.	d.		s.	d.
Laid Highland Wool, per 24 lbs.	6	9	to	7	0
White do. do.	9	9		10	3
Laid Crossed do..unwashed	7	9		8	3
Do. washed do.	8	6		9	6
Do. Cheviot unwashed do.	8	0		10	6
Do. washed	12	0		14	6
White Cheviot, washed	19	0		22	0

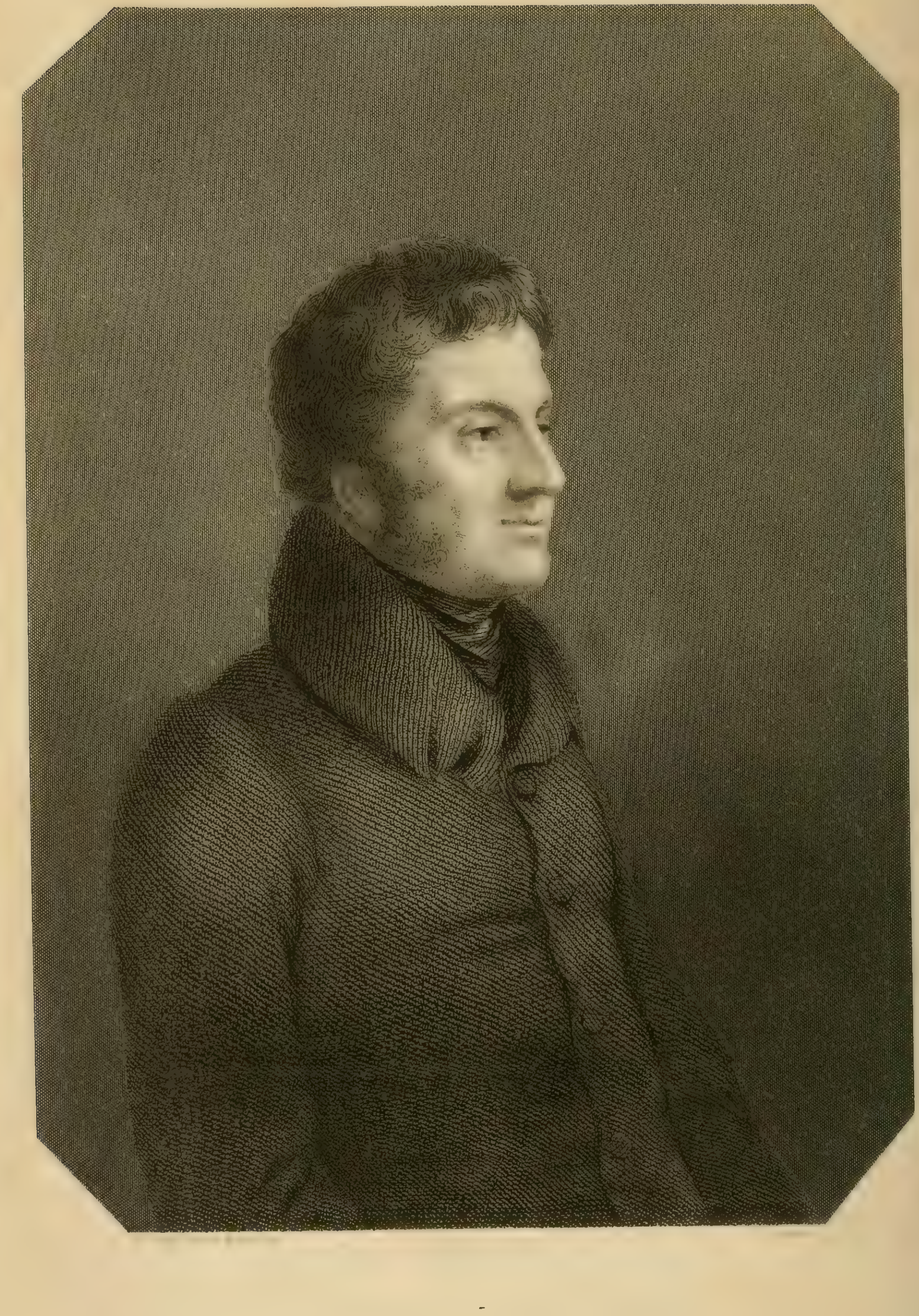
FOREIGN.

CITY, SEPT. 26.—The Wool sales were brought to a close on Saturday evening, and considering the very extraordinary position in which trade has been placed by the recent "turn out," have gone off as well as could have been expected. The daily sales we continue our account of below.

The imports of Wool into London last week were 4699 bales, of which 1057 were from Van Diemen's Land, 1068 from Algoa Bay, 1173 from Port Philip, 449 from Germany, 914 from the East Indies, 8 from Buenos Ayres, and 30 from Spain.

LEEDS, Sept. 23.—There has been no improvement in this branch of trade during the past week; few inquiries have been made for any descriptions of Foreign Wool, and prices are nominally the same.

Printed by Joseph Rogerson, 24, Norfolk-street, Strand, London.



THE FARMER'S MAGAZINE.

NOVEMBER, 1842.

No. 5.—Vol. VI.] [Second Series.

PLATE I.

Earl Spencer, of whom we give a portrait in this number, is too well known as an eminent breeder, and a sincere and zealous patron of British Agriculture, to need any remark from us. His lordship has been for many years, and still is, the President of the Smithfield Club, which was in a very great measure through his means advanced to its present state of prosperity, having been at one time at a very low ebb. He filled the office of President of the Royal Agricultural Society of England during the first year of its existence, and we hope when the proper time arrives to see him again occupy the President's chair in that Society. A short account of the stock and cultivation on his lordship's farms at Althorpe and Wiseton will be found in that portion of Count de Gourcey's Tour which we give with this Magazine.

PLATE II.

THE CAPE SHEEP.—*(For Description see page 320.)*

WEST-FIRLE FARMERS' CLUB.

Under-Draining.

The Chairman commenced the discussion by describing his experience in the different kinds of underdraining. On heavy lands his plan had been to drain with chalk, 2ft. 6in. to 3ft. 8in. or 9in., according to the nature of the soil, and to fill the lower spit with chalk, though he was still in some doubt as to the size of the chalk which it would be most advisable to use. It would appear feasible that when the chalk was larger, the drain would stand better. The distance of one drain from the other was about a rod and a half. He was not quite satisfied whether, as a general practice, it was better to go across the field, or up and down; in stiff lands, where the water is occasioned by the rain solely, the drains should go across the field. As to the material of the drain, he considered that tiles, with a small quantity of chalk on the top, were preferable. The mole plough had been in considerable use during the last few years, and on pasturage lands of a stiff soil it had a very good effect; it would, it was true, break up in many places, but the process was easily repeated, and at little expense. On lighter pastures, where one might be afraid of the expense of chalk, turf might be employed with a wedge-like shape. Some left a shoulder in the drain, to rest the turf on, but when it got dry the shoulder would fall, and let the turf in. He had done some with straw made into bands, strong and large enough to hang in the drain, which, rammed in well, would stand for a length of time—a method much followed in Suffolk and Essex. He had now some drains made after this fashion, which had lasted five years. One of the greatest evils was that arising from the silt which filled up drains of chalk, the abrupt surface of which seemed adapted to collect the dirt. In a season like this, the ditch being full at the bottom of the field, the silt had worked up the drain, which had consequently been blown up. In cases where a main drain ran up the centre of the field, it would be advantageous to have a flap or valve which by the pressure of the water in the ditch should lie close, and so prevent any silt from getting into the drain. Subsoil ploughing, if it were used more frequently, would materially assist the operation of draining, but it was not advisable to use it alone. He had lately seen a field which had been subsoiled but not drained, and it was the wettest piece he had seen. Subsoiling and draining together had a very excellent effect, though the advantage was destroyed by placing the horses in the furrow, as this autumn they had been unfortunately compelled to do.

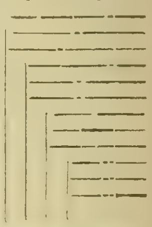
A member here observed that Pearson's plough, to be effectual, required a soapy clay and uniform soil. He advised, in draining with tiles, to have those which are bent in this form ⌒, and in a springy soil to place them with the open part at the bottom, because the springs rise in that direction; but on the contrary, if the soil be stiff, the openings should be at the sides of the drain, alternating with each tile. He had found that on light soils the sand had filled up the chalk more than it did the wood drains. He had tried this, having had drains severally made of chalk, stones and wood, and the latter were running long after the former had been choked up. The plan advocated by Mr. Smith, of Deanston, viz. to lay turf on the top of a tile drain, was approved of, and it seemed to be the general opinion that heath or rubbish thrown in immediately upon the tiles was better than that the soil should be laid on close to them.

Another member detailed the results of his experience in underdraining. His farm had been much experimented on. Some few years ago one field had been drained with flints and two with chalk; not one of them ran now. The fault at that time of day appeared to him to be, that they had not gone deep enough. He had now drained 30 inches deep with alder, placing the large wood at the bottom, and treading in the small wood and rubbish, so as to leave a drain nine inches deep. These drains had now been made three years, and were running as well as ever. But it was found that the quantity of water taken away by the wood was not so large as that carried off by the tile-drains. The tiles were unquestionably the best material; though dearer, they required less repair, and did not stop up so readily. The depth of the drain was a matter of considerable importance; it was often made very shallow, but in Scotland the drain would be found as much as 5 and 6 feet deep. The deeper the drains were, in moderation, the more soakage was obtained, and consequently the wider apart the drains might be placed. It was stated, that in many situations in this county (as at Mayfield) it was requisite to have your drains 5 or 6 feet deep. Instances were also mentioned where, in the west of Sussex and elsewhere, with a good hazel mould and a stiff subsoil, the drains were formed of the *soil itself*.

Some desultory conversation ensued, from which the results worthy of being recorded were to the effect that, in chalk drains, it was not advisable to place the fine chalk at the bottom; that it was a mistaken notion to place the drains very far apart, as might be ascertained by the wetness always in that case perceptible half-way between them in merely walking over the land, and that it was erroneous to suppose that on heavy soils underdraining could be perfect without furrows to take off the top water; the water could be prevented from carrying off the manure with it by constructing the furrows so as to run lazily.

The question next considered was the direction in which the drains should cross the field, which must in a great degree depend upon the inclination and dimensions of the land to be operated upon. It must be agreed that the less intricacy there is in a series of drains, the less likely they are to become choked and inoperative; and upon this ground it would seem that the prevailing method of cutting cross, or rather diagonal, drains to a main trunk or trunks, and thus to obstruct by corners the progress of the water before it can be discharged from the land, is not so good as the simpler and safer plan of cutting the drains in parallel lines from the ditch at the bottom of the field straight up to the top, each to empty itself.

On the other hand it might be said that by this latter method the lateral soakage between the drains was not so effectual; that the water would not, in short, be caught so generally throughout the field as by cross-draining; and one of the members explained to the meeting the plan which he pursued, whereby the supposed advantage of the cross system is preserved, and the evils of many drains running into one are in a great measure avoided, the drains being laid in the position of the lines in the margin. But the most valid argument adduced in favour of having the drains all cut up and down the field was that used in Mr. Smith's pamphlet, viz., that the strata or layers of which the subsoil is formed do not run in the same line as the slope of a hill—covering it like the layers of peel on an orange—but, on the contrary, are piled at angles to it, so that the line of the hill in its descent cuts the end of each layer, and it is obvious that a drain carried in that line will do the same, and be certain to gather the water which runs on the surface of every stratum, but which, if the drainage were crosswise, would, going beneath one drain, escape to the top soil before it reached the next.



Some conversation took place as to the expense of draining with tiles. It appeared that 160 rods, computing that length to take 2,400 tiles, would cost 4*l.* 4*s.*, or thereabouts, and that the best method of getting the work executed is to have the digging done by the rod, and the filling-in by the day; and if it should cost a little more, the superiority of the work will quite counterbalance that.

During the evening allusion was made to the disputes and difficulties which frequently arose between landlord and tenant, as to the allowance (for the drains) the former should make to the latter on leaving. It is generally stipulated in the lease that if the tenant think proper to undertake any draining, he shall give notice to the steward, in order that the latter may judge whether or not it is requisite; but not half of the tenants think of doing so. Upon this point the opinion of the meeting seemed to be decidedly favourable to the practice which generally obtains in Scotland, where the landlord is at the expense of draining, and the tenant pays him interest on his outlay.

Some members of the club being absent, whose opinions and experience upon this important subject would be valuable, the discussion was not closed.

LEOMINSTER FARMERS' CLUB.

The monthly discussions of this highly interesting and important society were introduced by the President with a pleasing description of Earl Ducie's Whitfield Example Farm, a plan of which, describing the system of cropping for the present year, was exhibited, and elicited the approbation of every member present. The President, in his remarks, adverted to the extraordinary abundance of the produce of this farm, and the superiority of the condition in which he found the whole, stating it as his conviction that the great success attained was principally to be attributed to thorough draining, and a judicious system of cropping. It was also very gratifying to hear that any agriculturist is at liberty to inspect the proceedings of the farm, which the President strongly urged every member to do, if either business or pleasure should call them in that direction. He also alluded, in the most eulogistic terms, to the great and uniform courtesy and hospitality exercised by the superintendent, J. Morton, Esq., to all anxious for information, or who may, from other motives, be induced to visit this pattern for agricultural practitioners.

SHEEP MANAGEMENT.

The meeting, which was unusually large and respectable, then proceeded to consider the subject for the evening's discussion, viz.—" The best method of managing Sheep."

The **PRESIDENT** congratulated the members that several very eminent breeders and feeders of sheep were present, who had met to give the assistance of their great experience on the important subject before them; and we may venture to assert, that on no previous occasion was greater interest excited, or desire for mutual improvement manifested, than during the discussion of this highly entertaining and popular subject. But as it would be difficult for us to follow the discussion in all its bearings, and present our readers with the whole of the excellent and judicious observations, which were elicited during the meeting, we must content ourselves by merely laying before them the results thereof in the following resolutions, which were almost unanimously adopted :—

1st.—Resolved : That as the club had on a previous occasion decided upon the best method of feeding sheep (*Vide* p. 17 of 1st Annual Report), the meeting considered that the management of the breeding flock only claimed their notice.

2nd.—Resolved : That the proper time of sending the ram to the ewes is from the 20th of September to the 20th October; and that the club agreed with the opinion of M. Tessier, " that the time of gestation averages 152 days," thus bringing the lambing season between the middle of February and the middle of March.

3rd.—Resolved : That the ram should always be sent first to the ewes intended for draught from the flock the following year.

4th.—Resolved : That one Leicester or long-woolled ram, if sent to the pasture to the ewes, will serve 70; but if kept in, and the ewes taken to him, one ram will be sufficient for 140 ewes.

5th.—Resolved : That one Southdown ram, if sent to the ewes, will serve 100; and if cotted, and the ewes taken to him, one ram will be sufficient for 150.

6th.—Resolved : That about a fortnight or three weeks previous to the ramming season, the ewes should be changed to a better pasture; and that during the time of pregnancy they should be well, but not highly kept—a dry pasture being far preferable. It was also recommended that, if possible, they should be supplied with dry food during bad weather.

7th.—Resolved : That during the lambing season the flock requires the most unceasing attention, and that the skill and management of the good shepherd will now more than usually be evinced.

8th.—Resolved : That the ewes should lamb in enclosed yards surrounded with open sheds.

A variety of opinions prevailed as to the propriety of assisting ewes at the time of yeaning. Some advocated leaving the animal to nature, except in cases of difficulty; others strongly recommended the interference of the shepherd. After a protracted and somewhat animated discussion, it was at length

9th.—Resolved : That assistance to ewes in time of yeaning should be very cautiously administered; and that even then, except in case of a cross birth, it should be left to the discretion of an experienced shepherd.

10th.—Resolved : That if it be necessary to administer any thing to weak lambs, a teaspoonful of peppermint is much to be preferred to ardent spirits.

11th.—Resolved : That the feed, during the lambing season, should be on a good sound meadow, in a southern aspect, or a dry pasture that has been kept from the middle of the preceding summer, with a little sweet hay.

12th.—Resolved : That on the third day after weaning, the ewes should be once thoroughly milked.

13th.—Resolved : That after weaning, the wethers should be separated from the ewe lambs, and divided into small lots, according to the convenience of the pasture; young lambs being found to thrive much better so, than when large numbers are kept together.

14th.—Resolved : That if the lambs are strong, and the ewes are intended for sale, the first yeaning should take place early in July; but if intended for stock, they should be weaned towards the latter end of the same month.

15th.—Resolved : That the keep of lambs, when taken from ewes, should be *mixed seeds of that year's growth*; and that they should have an occasional change, in preference to a permanent pasture.

16th.—Resolved : That as at this season of the year, when the frosty mornings set in, several of the lambs of a flock are lost, apparently from the same disease, the seat of which has generally been considered to be an obstruction of the water passage, the following recipe has been found highly beneficial, and has been known altogether to avert the catastrophe, if regularly and skilfully applied :—A teaspoonful of turpentine; *after* which three tablespoonsful of savine tea, and the same quantity of rue tea, mixed together. As the turpentine will not mix with the latter ingredient, it must be given *alone*. This dose should be given at the interval of a week. The same quantity of turpentine may also be administered in a little common salt and water, either from a horn or bottle; if properly done, it is calculated that 100 lambs may be drenched in an hour. It was also recommended that the lambs should be folded the night before, that the dose may be given when fasting.

17th.—Resolved : That if the lambs are intended for fattening, their keep through the winter was decided upon in a former discussion (See 1st report, page 17); but if for store, that the best of the pasture be allotted to them, with a small proportion of dry meat and a few turnips; the common varieties being preferred to the Swede.

18th.—Resolved : That for washing sheep, tanks constructed for the purpose by the side of brooks or rivers should be used; this situation being preferred as admitting a free current of water, and affording protection to the washers, as well as insuring the better and more effectual performance of the work.

19th.—Resolved: That shearing should follow washing in about nine days or a fortnight, according to the state of the weather; which, if favourable, may be commenced about the last week in May or the first week in June.

20th.—Resolved: That the process of shearing should never be carried on without a proper application for shear-cuts being at hand; as by a little precaution on the subject, many an irritating and troublesome sore is prevented, and the shepherd saved considerable trouble; also that the following recipe has been proved eminently successful, viz.—Friar's Balsam, Tincture of Myrrh, and Goulard Extract.

21st.—Resolved: That it may be advisable in some cases to wash and shear sheep earlier in the season.

22nd.—Resolved: That fly-powdering should be resorted to as soon as the sheep are shorn, and repeated monthly, or as the weather may render it necessary.

At the conclusion of the discussion, it was agreed that the subject for the consideration of the members at the next meeting (Nov. 18th), be "The best method of managing cattle."

THE FORMATION OF PEAT MOSS.

At a recent meeting of the Geological Section of the Birmingham Philosophical Institution, the first part of an interesting paper, "On the formation of Peat Moss," was read by William Mathews, Esq., one of the members of the society. Mr. Mathews commenced by noticing the physical appearance of those extensive tracts of wild and uncultivated land in which peat mosses abound, and said that the object of his paper was to discuss the natural history of these peculiar formations, with a view to furnish some explanation of their phenomena. In doing so, the course of his enquiry would be directed, first, to the composition of peat mosses, and the manner in which they were formed. Secondly, to their effects as agents in the physical changes and geological character of the earth's surface. And thirdly, to their influence in operations more exclusively agricultural, and thence on the social condition of a people. With respect to the geographical distribution of peat moss, it was only necessary to say that it abounded more or less in most countries of Europe, and that in their own islands it occupied large tracts of the northern counties of England, a still greater portion of Scotland, and that in Ireland there was in 1814 an estimated extent of 2,800,000 acres of waste land, the greater portion of which was peat moss. The substance of the peat mosses in their own country varied from a few feet to thirty, forty, and even fifty feet in thickness, its composition and properties differing materially, according to the depth at which it was found, or in proportion as it had lost the character of the living vegetable. The upper surface of the living peat was covered with a variety of mosses, aquatic plants, coarse grass, and heather. Underneath, for about ten feet, might be traced the fibres of the predominant plants, retaining too much of the character of the vegetable to admit of its burning with celerity. Beneath this, it assumed the shape of a dark-brown turf, the fibres still imperfectly visible; and still lower, those fibres ceased altogether to be distinguishable, the substance assuming the form of a dark homogeneous mass, increasing in blackness and compactness as it descended, and in the lowest portions when dry and consolidated, it had a strong resemblance to pitch or bituminous coal, was susceptible of considerable polish, and had a conchoidal fracture in every direction. A sectional display of some of these bodies elicited still more singular phenomena. Occasionally, the peat was to be found alternating with alluvium, showing that the locality must have been subject to more than one inundation, and again to the establishment of successive eras of growth. There were also distributed throughout the mass the roots, branches, and trunks of trees, sometimes irregularly interspersed; at other times arranged in regular layers, and exhibiting a systematic disposition of successive growths. The generality of peat lands might be properly divided into two kinds—those in which the existence of the peat plants was still rife and vigorous, and those whose vitality was extinct, and which were known as dead peat mosses. The situations most favourable for the growth of those plants that formed the true peat mosses were those in which the waters were supplied in minute and gentle springs, and were retained in extensive and shallow basins. Where the sub-strata were percolative or the streams rapid, the moss rarely attained any great extent of development; it vanished before the progress of cultivation, and the growth of whole districts was at once arrested by any cause that removed the permanent supply of moisture. Mr. Mathews here proceeded to describe the character of moss peats, the nature of the plants which entered into their composition, and the manner in which the process of formation was carried on. The occurrence of trees in peat moss had led many able writers to ascribe their origin mainly to the ruin of the forests in which the trees had their birth, and the vast abundance and magnitude of these trees would seem, at first sight, to give some confirmation to this theory. Dr. Rennie, amongst other writers upon the subject, had entered into a number of extensive and minute calculations in support of this doctrine; but an examination of the process by which woods and plantations in the vicinity of peat moss were gradually encroached upon by the insiduous invasion of the *spagnum palustre*, (one of the most important agents in the formation of peat,) would illustrate the mode by which the ancient forests had been similarly invaded and eventually destroyed. In the northern moorlands it was customary, when plantations were made, to surround them with a wide ditch, cut, if practicable, sufficiently deep to reach the subsoil, in order to the effectual draining off of the water, and the arrest of the further growth of the moss plant. In the event of these precautions being neglected, the *spagnum* first attached itself to the sides of the ditches, gradually filled up the bottom, and, by stopping the free passage of the water, at length established itself among the trees. Its operations there were equally rapid and destructive. It surrounded the bases of the trees, crept a considerable way up their trunks, and, by the constant application of the moisture of the plant, stopped the flow of the sap, until the tree ultimately perished. They were then blown down by the storms, and their inhumation proceeded with the same celerity, till in a few years all trace of the plantation was lost, and a few more seasons found them imbedded several feet deep in peat. The prostration of trees on peaty lands was also effected by means of land slips, or the gradual abrasion of the strata by winter torrents; and ample evidence was adduced by Dr. Rennie, as well as by Mr. Lyell, to show that extensive forests must have been destroyed by the Romans on their first invasion of the country, as well as by the various enactments of the British Parliament, during the reigns of Henry II. and Edward I., by which the flow of water was obstructed, and the formation of morass and subsequent growth of peat was facilitated. Having described the mode in which peat mosses were formed, Mr. Mathews next proceeded to notice their influence as agents in the physical changes and geological character of the earth's surface. To an attentive and philosophical observer, it was a source of no ordinary delight to witness the admirable contrivance and wisdom displayed in the arrangements of Providence for the restoration and support of every part of the wonderful machinery of Nature. Barren and uncultivated as was the external character of these moors, a little investigation would convince them to what great and important uses they were subservient. The living peat moss was a great natural laboratory or manufactory, in which was stored up as it was elaborated, and eventually distributed as it might be required, the vegetable pabulum so essentially necessary to recruit the worn-out functions of exhausted soils, or to assist in the preparation of new. Of its value as a fuel they were all aware, and without the resources which it thus furnished large numbers of the poorer inhabitants of their country would be still more wretched than they were. It provided this material unsparingly, and unlike that yielded by the mine it was replaced as fast as extracted; and it was only where the growing wants of an increasing population crowded upon its confines and demanded further contributions that it yielded to the influences exercised upon it, and dealt out the higher productions required for the sustenance of man with a still unsparing bounty. Having described the process adopted in excavating the peat moss for the purposes of fuel, and the manner in which the peat was renewed in the pits dug for the purpose, the lecturer noticed the local effects which the presence of the moss produced on the climate. The immense quantity of moisture absorbed by the moss plants caused a constant action and re-action on the atmosphere, and occasioned a permanent humidity that rendered all attempts at cultivation on a limited scale perfectly hopeless. A land slip, the abrasion or displacement of a rock, or any similar natural operation, would sometimes unwater a whole district of peat moss; and the conditions favourable for its growth no longer existing, the process became one of decay instead of production. The quantity of peaty matter annually carried off by the winter torrents, which worked for themselves a channel in the peat, was very great; and the rivers which had their sources in the districts where the peat abounded, were at times so deeply tinted with its peculiar colour as to resemble light port wine. It was thus conveyed within the tidal action of the sea, and there mixing with the matter transported from the neighbouring shores assisted in the formation of the rich alluvial soils that lined their banks. It seemed also by its acid qualities to assist in the disintegration of the hardest rocks. He had frequently observed on the Yorkshire hills, where the millstone grit had protruded through the thick covering of decayed peat, that the agglutinating matter of the grit stone was softened, and its large silicious crystals were so thickly mixed with the peat as to form a coarse gravel, in which state it was transported by the winter torrents to the river. By the bursting of a lake, or any similar occurrence by which the water was discharged into the bed of a river in unusually large quantities, the extent of transported peat might be so great as to cause its deposit in the valleys in extensive beds; and it was on this hypothesis that he should account for the occurrence of these beds in the alluvial accumulations of their own neighbourhood, some of which had been described in the interesting paper read by Mr. Ick to the section, "On the Gravel of the Rea Valley." The second part of Mr. Mathew's paper will be read at the next meeting of the geological section.

PASTURE LANDS & MANURES.

BY THE REV. W. THORP, WOMERSLEY.

(*From the Leeds Mercury of December*, 18, 1842.)

Much might besides have been added respecting the *general and expensive habit pursued in purchasing bones and rape-dust*, upon many farms costing more than the rent itself. What says M. de Jough, in a letter from Holstein, upon the reasons why corn is produced cheaper on the Continent than in England? "It is an undeviating rule laid down in our system here, *that a farm must support itself*, and work on its own resources, i. e, that a farmer must not on any account part with his cash, except for such things as cannot possibly be produced on his farm." After saying that even a portion of wearing apparel and implements are made on the farm by purchasing wool and hiring an artificer, he then proceeds to say, "*The greatest consideration and difference in the cost of producing corn more cheaply on the Continent than in England, is in the production of manure, which ought never to be bought, except in the single instance when to be had cheap.* When the distance is no more than about six or seven miles from a large town, the purchasing of it should be avoided, if possible; for although a waggon load of dung may be had in Hamburgh, for instance, at 1s. 5d., the labour and time spent in fetching it, the expence of laying it in meats intermixed with heath or grass sods, occasions an outlay which ought to be avoided, and interrupts the regular coarse of labour on the land. The Holstein system of keeping as many cows as can properly be fed, combines the means of making at the same time larger quantities of manure and large quantities of butter for exportation. There are many large estates, either farmed out or not, on which 200 or 300 head of cattle are kept, which are fed in the stalls from November to the middle of May, and remain out in the pasture day and night from May to the end of October; so that in fact the farmer has only the manure made during winter; yet this is sufficient and sometimes more than sufficient for his wants, and his lands are constantly in the best order."

If, then, agriculture is to increase in prosperity, (and by prosperity we mean increased production without proportionable expence in producing,) it will be by the adoption of some of the suggestions mentioned in the report. For by what means has the rapid improvement and extension of the agriculture of Great Britain since the year 1760, (only 80 years ago) been made, so as to provide food for the increase of 10,000,000 of population, and being able to add, by its progress in that period, the enormous sum of 80,000,000*l.* a year to the free disposable income of the country? This rapid advancement, which is unprecedented in the history of wealth and civilization, was begun only so lately as the reigns of George I. and George II., by the culture of the turnip as a field crop by Lord Townshend and others; by the improvements in stock husbandry, and in the breeding and fattening of cattle—and these not until the time of Bakewell of Dishley, and Culley of Northumberland. Within the last twenty-five years the quantity of wheat grown on the Wold district of Yorkshire described, and conveyed along the Driffield canal,* has been just doubled, that of flour increased four-fold, and the cultivation of oats been replaced by that of barley. On the other side of the Humber, the wolds of Lincolnshire from Barton to Spilsby, when Arthur Young wrote his survey, consisted of mere wastes, occupied by rabbit warrens. Could he now revisit these wolds, he would hardly recognise a single feature of their former state. The warrens have disappeared, and in their stead are some of the finest farms and best managed land in England. In 1727, a field of eight acres, sown with wheat in the vicinity of Edinburgh, was reckoned so great a curiosity, that it excited the attention of the whole neighbourhood, and numbers of persons came from a distance to see it! In 1763 (seventy-eight years ago) agriculture almost everywhere in Scotland was in the most barbarous state imaginable. Maxwell states that there was no rotation of crops; fallows were unknown except in one or two counties. Neither turnips, clover, nor potatoes had been so much as heard of, but corn followed corn in an unbroken series, and as might be expected, the returns were only about three times the quantity of seed sown. Even in East Lothian, so late as 1757, neither turnips, potatoes, nor any cultivated herbage, formed any part of the system. The famous Lord Stair first introduced turnip culture into Scotland, but Dawson, of Frogden, commenced raising them on a large scale in 1763, and may thus be considered the real father of the improved Scotch husbandry; so that the grand improvement in modern agriculture—that by which it is distinguished from the old—*is the universal introduction and superior management of green crops.* But further, in what particular is the agriculture of Belgium, which has been celebrated for these six hundred years, and now termed the garden of Europe, at the present time so vastly superior to that of England and Scotland? How is it that the Netherlands,* being the most densely peopled country upon the face of the earth, can feed her own population, and yet export nearly one-third of the produce; and with a soil inferior to our own, can sustain nearly twice the amount of human existence? It is by an extention of those principles which have been proved to be the foundation of English and Scotch agriculture; by their judicious selection of green crops, so that every acre of land shall be in a constant state of production—hence economy of land; and in the management, application, and preservation of different kinds of manures, by which these crops are to be raised; or in other words, by the repeated and perpetual growth of carrots, turnips, rape, spurrey, buck-wheat, clover, and potatoes, and by the most scrupulous care in the collection of every particle of manure. It is not the superior soil† and climate‡ of Belgium which gives her the

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* Quantity of produce conveyed along the Driffield canal:—

In 1819—Wheat conveyed, 8,000 qrs., and 8,000 sacks of flour.

In 1838—Wheat conveyed, 15,000 qrs., and 32,000 sacks of flour.

The quantity of wheat about doubled, and that of flour increased four-fold.

In 1819, Oats conveyed 20,000 quarters.
1833, do. do. 5,200 ..
1819, Barley do. 5,000 ..
1838, do. do. 20,000 ..

The cultivation of oats being just replaced by that of barley.

* Population—in Holland........ 224 on the square mile.
Great Britain.. 152 do.—*Facts by Sir R. Phillips*, p. 750.
China.......... 177 do.—*Neuhoff's Travels.*

† "The fertility of the polders, and of some deep rich loams in the province of Hainault, and in a few spots in Flanders, has given rise to the notion, that the fine crops generally observed through the whole of Belgium are owing chiefly to a very superior quality in the soil. Travellers hastily passing through the country, and observing the abundant harvests, naturally adopt this opinion; but nothing is further from the real fact. The rich parts of Flanders are but few in comparison to the poor, as an attentive examination and analysis of the soil will clearly show. The average fertility of the land in the provinces of East and West Flanders, and Antwerp, will be found much below that of our inland counties, leaving Essex and Kent out of the question. If a fair comparison were made, it should be with the poor light soils of Norfolk or Lincolnshire, where industry and capital have overcome the natural poverty of the land, and made it highly productive."—*Flemish Husbandry, p.* 9, *Farmers' Series.*

‡ The climates of Belgium and England vary not more than do the southern from the midland counties of England. According to Humboldt, the mean temperature of the year is

At Aberdeen..............	47.22
At London................	50.36
At Brussels..............	51.80
At Amsterdam............	51.62

According to Sir R. Phillips, (*Facts, p.* 535):—

		Winter.	Spring.	Sum.	Aut.
Mean temperature of	England	40.6	50.2	64.3	51.
Do.	Scotland	37.	44.2	56 4	47.7
Do.	London	39.56	48.56	63.14	50.18
Do.	Brussels	36.68	53.24	66.20	51.08

So that in Brussels the winter is 4° colder, the spring 3°, the summer nearly 2° warmer than the mean of England. The autumns are the same in both countries. The climate of Great Britain is, however, subject to considerable variation; there is frequently a difference of 4.8 degrees in different years at the same locality, and as much as 10° in the same month in different years. The mean temperature of 4.8 is capable, when added or subtracted for the whole year, of producing a decided difference in our seasons. But these variations of climate range advantage over England; but it is the superior skill, industry, and management of her farmers; so that the grand defect in the present state of farming in England and Scotland—that in which they are behind not only Belgium, but China, Switzerland, and some parts of Germany and France—is the rigid adherence, on all lands, to nearly the same system, the production of only one annual green crop, instead of two, from the same land, and particularly allowing the turnip to consume a whole vegetating season in its growth—together with the total neglect and waste of the most valuable portions of the manure; and it is only by imitating the rural economy of these countries, by obtaining a quicker succession of green crops, by taking every opportunity to intercalate tares, rye, turnips, scarlet trefoil, Belgian carrots, &c., and above all, by landlords making homesteads in a condition capable of collecting and preserving every atom of manure, that the agriculture of Great Britain will be able to keep pace with her steadily increasing population.*

ON SOWING PEAS.

Peas, in open dry weather, should now be sown, on an early border or other sheltered situation. Cormack's Early May, Early White Warwick, Improved Race Horse, and the Early Frame Double Blossom, are the best for early sowing. The drills may be three or four feet apart, according to the sorts of peas and the quality of the ground, and two or three inches deep in the drill. These early crops should be dunged in the drills. If the ground has been prepared, and manured as above directed, it is now only necessary to dress with the rake the space to be occupied by the drills and above the dung. If the peas are to be sown in double lines the drills should be formed from seven to nine inches separate. A small quantity of bog mould or peat dross, pounded small, or put through a wire search or riddle, should be spread along the bottom of the drills previous to sowing, and also over the seed in the drill which will prevent it from rotting or splitting by the cold wet soil. The refuse of a peat stack will answer the purpose well, and if brought from low marshy grounds, the sulphur it contains will serve other two important points, viz., the preserving of the seed from frost and mice. Draw the mould over the seed an inch or two deep, leaving it as loose as possible; afterwards, when the peas are germinated, but not above ground, choose a dry day and draw a little more mould over them; then give a good dressing with the rake—2lbs. of seed is sufficient for one sowing at this season, which may be repeated every three weeks, weather permitting. If the ground is not already dug, a moderate sowing should be put in during the progress of digging; and should the soil prove heavy and stiff, the more littery dung will succeed best, and laid in the trenches a spit deep and same width, and at the proper distances; beyond which other two trenches or spits are to be turned over, and the seed drills then opened over the dung. Take your station in the open trench while forming the drills and sowing the peas;—turn over another trench, and with the mould from the bottom of it cover the last sown drill, leaving them loose and rough, as above stated, for some time. If the sown ground be not well sheltered, open a small narrow drain on the north and north west side of it near the drills, in which form artificial hedges of the peas' stakes; then press the earth firmly

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through periodical times. Mr. L. Howard, of Ackworth, says, "The extent of the periods, for want of a sufficient number of years of accurate observations, cannot at present be fully determined, but they have the appearance of being completed in seventeen years. In a paper about to be published in the Transactions of the Royal Society, Mr. Howard proves that these cycles of temperature correspond with 223 synodical revolutions of the moon, or the return of this satellite to her modes—i. e., a period of eighteen years: that there are nine years in which there is, with some fluctuation, a mean descending temperature, and nine of ascending temperatures; the years of low temperature being wet and unfruitful, and those of ascending, the contrary. That the present year of 1841 is the turning year from the cold to the warm series of years."

If this view of the seasons be correct, the northern portion of England will enjoy, during the nine warm years, a climate superior to that which the south of England had during the nine cold years; for the annual mean temperature of the extreme north of England (Carlisle) is 48°, while that of the extreme south (Sandwich) is 50°; and therefore there is a full answer to all objections respecting the double cropping performed in the south, which is said not to be capable of being effected in the midland and northern counties, because the climate of the south is so much superior; except it could be proved that these double crops are only obtained in the south during the nine years of ascending or warm temperatures, which it is impossible to prove. So that during nine years out of eighteen, the northern and midland parts possess the same, if not a superior climate, than the southern possessed during the preceding nine cold years.

The years of productiveness, as shown by the price of corn, seem to run in cycles of eight years of descending, and six years of ascending temperatures. These periods are taken from James Wilson, Esq., on "The Influences of the Corn Laws." The seasons have some certain influence, but there are other perturbing causes which affect the price of corn.

Increasing supplies and falling prices.	s.	d.		Increasing supplies and falling prices.	s.	d.	
1817	94	0		1830	64	3	
1818	88	8		1831	66	0	
1819	72	3		1832	58	8	
1820	65	10		1833	52	11	
1821	54	5		1834	46	2	
1822	43	3	—Warm period.	1835	39	4	—Warm period.
Diminishing supplies and rising prices.				Diminishing supplies and rising prices.			
1823	51	9		1836	48	6	
1824	62	0		1837	55	10	
1825	66	6		1838	64	7	
1826	56	11		1839	70	8	
1827	59	9		1840	—		
1828	60	5		1841	—		
1829	66	6	—Cold period.	1842	—	—	Cold period.

* The increase of population in the United Kingdom is equal to 1½ per cent. per annum, or about 4,000,000 in every ten years; and as each person consumes 8*l.* of raw agricultural produce, the agricultural progress, in order to feed our own people, must be equal to 32,000,000*l.* in every ten years.

about their root ends, and support them by driving in some paling stakes, with a spar or long pole on each side, and at middle height, and draw them close with a tar cord. Here they are to stand out of the way as a defence against cold cutting winds, till wanted for the peas to climb upon. A mouse-trap or two baited with oatmeal, and secured with small cords from cats, should be kept set among the sown peas till grown one half inch above ground. Chopped crops of whins have been laid over the seed to keep mice from it, but a few ounces of the flower of sulphur will do better and is less troublesome.

Every gardener ought to have a patch of peas (of sorts as above) in readiness for transplanting in case of failure, or accidents, and to fill up blanks if necessary, and for a more early crop. Choose a well sheltered spot with a south aspect, and in it dig a pit two or three feet deep, four feet wide, and as long as the quantity of peas may be required; in this pit form a sort of hot bed with stable dung or leaves, over which lay some mould. Procure a necessary number of grass turfs, three inches wide, and same depth, cut them in lengths from nine to fifteen inches long, invert each turf, and with a knife make a slit two inches deep, place a band on each side of it, and open it two inches wide; put some rich mould in the grove thus opened, place in the peas two or three in the inch, cover and press firm. Place them one by one south and north on the bed, end to end and side to side, as close as you can press them, then cover slightly with mould through a riddle.

The best sort of bog mould for sowing peas with, is that which is composed of vegetable matter, principally such as is generally dug for fuel. This sort is antiseptic, and capable of resisting putrefaction. A stronger proof of this fact cannot be adduced than the many vegetable bodies which we see constantly dug out of this matter in a state very little changed from their original; although in many cases they must have been deposited there many centuries ago. The mould which is used for cultivating heaths, evergreens, and other tender-rooted plants, and which is generally called bog mould, is an excellent manure for early potatoes in long cultivated gardens; this sort should be called heath mould, being always found on the surface of uncultivated heaths, &c.

Perth, December. R. M'Nab.

AGRICULTURAL IMPROVEMENTS.

The following judicious letter has been addressed by J. H. H. Foley, Esq., to his tenantry on the Prestwood Estate:—

Gentlemen,—I do not recollect any period at which, in the midst of a general depression and distress of other interests, that agriculture has been so prosperous as during the present season. Providence has blessed us with the finest weather and a most abundant harvest; a spirit of energy and enterprize is visible everywhere, and a more than common interest is taken generally by farmers in the improvement of land. New implements are eagerly tried, new books are read, and many systems found to be erroneous are gradually giving way to more enlightened views.

Fond as I naturally am of agriculture, having given most of my time, and still more of my capital, for upwards of 20 years, in an honest endeavour to improve my land and farm buildings, to make your homes comfortable and respectable, and yourselves affluent and happy, you will not be surprised that in the stirring spirit of the times I cannot feel satisfied to remain a tranquil spectator of what is going on. Seeing then, with much gratification and satisfaction, the extensive and important improvements you have made upon my estate for several years past, and the capital you have expended in improving the quality of my land by the purchase of foreign manure, it is, I confess, my ambition to have an amended system carried out to perfection; that you should derive the utmost profit from the land you rent of me, and become patterns of superior management to the country around you; and it is at this season of prosperity, and in a year when, I am happy to say, I consider my estate better cultivated than I ever saw it before, that I venture, with every possible feeling of kindness and respect, to offer for your perusal a few remarks which I think of some importance respecting the management of green crops on your farms.

In the first place, I am happy to believe that the system of ridging and drilling turnips is, with very little exception, become a general practice on my estate; to this improvement I have looked with intense anxiety for several years past as the first important step to a *certain* system of profit on this quality of land. It used to be a general idea that turnips were a *casual* and not a *certain* crop, and on this point I have often ventured to differ, and know that many of you would not believe me; but of course it would be unfair to take *part* of my argument without the *whole*. Turnips, grown as they used to be, viz., stubble ploughed in shallow (four inches deep) after harvest, full of scutch, and that scutch left to grow till the July following, then ploughed several times in the same light manner and sown broadcast in August, will, I venture to affirm, assuredly fail; either there will be no turnips at all, or, under the best circumstances, a thick crop of tops and no butts. And what must be the consequence? No keep for sheep, a bad crop of barley, a crop of seeds as bad as the turnips, ending in a loss of rent paid, and manure bought, the scutch being the principal thing visible!

When I said that turnips were a certain crop, I added, if *cultivated properly*, and the way I pointed out was this—to plough the land as *little* as possible, but to plough it *deep*, and to do the whole *early*; to use the scarifier immediately after harvest (not the plough), and to make the land as clean as possible in all dry weather during the *autumn* and *winter;* then to plough it deep in the spring, to have all your land intended for turnips ready by this means by the *first of May*, and to allow yourselves the two months of May and June to sow the turnips, but to have none left for July. By drilling the seed with the manure, and using the horse-hoe nearly as soon as the plants appear, and afterwards setting them carefully out with a proper shaped hoe (and this part must be particularly attended to), I affirm you are *certain* to have a good crop of turnips, at least, as certain as you are to have a good crop of corn, being heavier or lighter according to the season. I also affirm that it is the *only process* by which you can keep your land *free from scutch*, and that you will by thus cleaning it, and feeding a heavy stock of sheep on it for six months, get one-third more quantity of grain and profit from your sheep, and will grow this *good crop* of turnips at *less expense* than you formerly did a *bad one*. I therefore am justified in considering this the first and most essential improvement that can be made, and this step I am glad to see that you have taken, with the exception of hoeing and setting out. I think your implements would be much better for that purpose if made broader, and some pains taken with the men by giving them a small prize, say 2s. 6d. for the best work.

The next green crop that comes under my notice is your meadows. These, I am aware, have been in a lamentable plight; but I have nearly drained the whole, and irrigated many, and I hope to see a corresponding care on your parts. To occupy them with profit, I recommend the same early system adopted as with turnips. I consider sheep the general stock you should calculate on for profit, and not cattle (with the exception of a few cows), particularly in a country where so much manure may easily be bought. There is no doubt that treading the land at wet seasons with horses and cattle is very injurious to it, more especially the newly-opened channels for irrigation; it is equally certain, no doubt, that late hay, which is long and thin, is not of half the value of that grown and made early. The grass cannot grow until it is put up, nor will there be half so much aftermath after late hay. Under these considerations I would recommend the meadows to be rolled (and better if manured), and put up for hay by the 15th of April; they ought to be ready for hay the 15th of June, have a good aftermath by the 15th of August, to be eaten off by the 15th of October, after which no stock whatever ought to be allowed in them before the 15th of March; they might then be grazed with sheep for a month, particularly the water meadows.

The few cows necessary for the dairy should be kept principally in the farm-yard during the winter months, and the sheep fed on artificial grasses, say Italian rye-grass, rye, vetches, &c., penned as on turnips, and cut green for the horses and cows in the yard. These, with the seeds after barley, treated in the same manner, will give ample food all the year round.

I would here observe, though I know it is contrary to general opinion, that artificial or natural grasses cut *before they are ripe*, that is, before *they* blossom and *seed*, are *more nourishing*, and *do not injure* or *impoverish* the land they grow on, *but if left to ripen they do*. It is, therefore, important to attend to this. It is also a question whether it would not be much more advantageous to keep a regular flock on your farms all the year round, than to continue the expedient you were forced to resort to, of waiting to see whether you *would have turnips before you would venture to buy sheep*. We will now examine how you could keep them.

Turnips for six months, say, from October 15th to April 15th. Sheep to be penned on a bare patch, to be fed in troughs, by a boy slicing the turnips, with the addition of hay and a little corn; April 15th to May 15th, grass from pastures, meadows, and water meadows; May 15th to August 1st, penned on vetches, rye, seeds, &c., with corn in troughs; August 1st to 15th October, to graze on aftermath.

This plan, so different to what has been formerly adopted, will, I know, appear difficult and impossible; but as you have taken the *first* and *great* step, and have provided the six months' turnips, let me intreat you to consider well the remaining part, and do as you have done the turnips —TRY IT! Feeling a pride and satisfaction in being landlord to such intelligent and industrious tenants,

I remain, Gentlemen, with great respect,
Your faithful friend and well-wisher,
J. H. H. Foley.

Prestwood, August 25th, 1842.

ON ANIMAL MANURES.—No. 1.

By Professor Charles Sprengel. translated from the German.

Animal offal.—All animal remains, with the exception of their excrements, are comprised under the above denomination. Animal offal is a very powerful manure, a circumstance which is to be ascribed to its being composed of substances which, even in small quantities, advance vegetation in a very powerful manner. It contains, besides some other elementary substances, a great quantity of nitrogen, sulphur, phosphorus and chlorine, of which it was stated previously, that even the smallest quantities perform an important part in the nourishment of plants. But it is especially the nitrogen which renders offal such superior manure. Moreover, animal offal contains these substances in such combinations as are either by themselves very soluble in water, or as, by their decomposition, form substances which require an equally small quantity of water for their decomposition, which circumstances, however, cause its action to be very transient. In all places where agriculture is in a high state of perfection, animal offal is carefully collected and used as manure, whilst it is neglected in countries where farming is carried on without intelligence; in such places it is not considered worth while to carry on the land small quantities of matter, because it is believed that the value of manure consists in its mass. Among the most valuable kinds of animal offal are the following:

1. *Carcasses of Dead Animals.*—Carcasses consist of bones, flesh, fat, and other soft parts. The flesh contains, according to chemical analysis, in 100,000 parts, on an average—

77,170	parts of water,
15,800	muscular fibre, vessels, and nerves,
1,900	cellular tissue,
2,200	albumen, and serum of blood,
1,800	osmazome, with a little lactite of soda, potash, and chloride of lime.
0,150	mucous matter,
0,900	phosphate of soda, and
0,080	phosphate of lime.
100,000	parts.

The muscular fibre, vessels and nerves, the cellular tissue, albumen and serum, osmazome and mucous matter, are those substances of the flesh which contain abundance of nitrogen, sulphur, phosphorus, and chlorine, and possess a high value as a manure. Of much less importance is the fat, which in its pure state consists only of carbon, hydrogen, and oxygen; and it would be still less worth if there were not the cellular tissue, in which the fat is contained, to which the manuring quality of the refuse of the tallow melter is to be ascribed.

The flesh of animals dying a natural death soon passes into a state of putrefaction, as it is not deficient in water, and it develops during that process a great quantity of ammonia, phosphuretted hydrogen, and some other putrid gases, not yet sufficiently known; if, therefore, nothing of these substances is to be lost, it must be as soon as possible mixed with matters which are able to receive and chemically bind the gases thus developed. In Belgium the flesh of dead animals, or such as have been killed on account of being diseased, is cut immediately into small pieces, which are divided over the field, and soon covered by ploughing them in. Against this procedure nothing can be said, provided the soil contains much humic acid, by which the developed ammonia can be chemically fixed. Still it is better to cut the flesh of carcasses in small pieces, and put it, with moist soil rich in humus, into a hole where it may rot, by which means all the ammonia will be chemically fixed. The bones also, which do not require to be bared of flesh, may be equally placed in the hole, and afterwards taken out and used by themselves. We generally find it stated that carcasses should be mixed up with quick-lime, and thrown into a ditch, where they may decay; but this occasions a considerable loss of fertilising materials, because the greatest portion of the nitrogen escapes. For if a portion of it combines with the oxygen of the atmospheric air, and forms nitric acid, which may enter into chemical combination with lime and ammonia, and so becomes nitrate of lime and ammonia; still, most of the nitrogen combines with hydrogen, and escapes under the form of ammonia. If nitrogen is not to be wasted, no lime should be added, nor is it at all necessary, if the carcasses have been mixed with soil rich in humus. It is true, that lime prevents the formation of phosphuretted and sulphuretted hydrogen gases, because by its presence phosphoric and sulphuric acid is generated out of the phosphorus and sulphur; but soil rich in humus will also (if not employed in too small a quantity) secure the putrid gases just as well; and as this kind of soil is by no means destitute of bases, sulphuric and phosphoric acid will in this case also be generated.

The Entrails of dead animals are to be treated in the same way as the flesh, if they are to yield the greatest advantage as manures. After they have been frequently worked up with humus soil, and are properly decayed, they form an admirable top-dressing; but must always be employed in small quantities, or they will make vegetation push much too luxuriantly.—*Gardener's Chronicle.*

(To be continued.)

THE CAPE SHEEP.

PLATE II.

The desert and almost unknown coasts of Adal and Ajan, and Maracatos, having been passed, the marshy district of Zanquebar, with its abundance of elephants, presents itself, with its city of Melinda, inhabited principally by Mahometans, but nominally dependent on the Portuguese. To this follows the Portuguese kingdom of Mozambique, and other various uncivilized tribes; and it is not until we reach the Dutch settlements north of the Cape that any authentic account of the sheep can be found.

The native Cape sheep are of the broad-tailed breed. Barrow gives one of the best descriptions of them.[*] He says that "they are long-legged, small in the body, and thin in the fore quarter and across the ribs. They have little internal or external fat, but it is all collected on the rump and on the tail,[†] proving them to be either a variety of the steatopyga, or a mixture of them and the broad-tailed sheep. The tail is short, broad, flat, naked on the under-side, and weighing from six to twelve pounds. The fat is of a semi-fluid nature, or rather having the consistence of a thick oil, and is frequently used as a substitute for it and for butter."[‡]

They are of every variety of colour—black, brown, bay, but mostly spotted; their necks are small, their ears long and pendulous; they weigh from 60 to 70 lbs. on their inland pasture, but when brought to the barren country about the Cape, they often dwindle down to 40. They are covered with strong frizzled hair, of which little use is made, except for cushions and mattresses. The sheep are neither washed nor shorn, but the wool is suffered to drop off of its own accord, which it does in September and October. The skins clothe the Hottentots and the children, or make bags for various household purposes.

These observations of Barrow refer to the native sheep alone, whether the property of the Hottentots, or of the European settlers, English or Dutch. Burchell gives a fuller history of the purposes to which the skin of the Cape sheep is devoted. "When these skins are properly dressed and cleaned, and a number of them sewed together, they form a much warmer covering than could be made from any other materials. The richer inhabitants, and those of Cape Town who can afford themselves more expensive coverings, affect to dislike the cheaper *koombaar* (the name given to these garments), because, they say, it smells of mutton; but the boor (the Cape farmer) is enabled, by his immense flocks, to select such only as have a smooth fur, and so he obtains a handsome coverlet, so unlike what a European could imagine for sheep's-skins, that it may be doubted whether many persons would even guess from what animal it was made. Those that have been brought to Europe have been viewed as the skins of some unknown quadruped. Few furs can be more beautiful than the selected skins of lambs thus prepared."[‖]

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[*] Barrow's Southern Africa, vol. i. p. 116.

[†] A writer of considerable talent, but evidently under the influence of much prejudice, says, that "they are wretched beasts; the other parts of the body seem drained to supply the accumulation of fat on the tail. They are lanky, sinewy beasts, more shaped for racing than roasting, and without an ounce of fat to encumber their speed."—Farmer's Magazine, August, 1821.

[‡] From this description of Barrow, and whose fidelity cannot be doubted, it would not have been expected that the Cape sheep would have been very profitable feeders; yet another traveller writes, "It was not without much astonishment that we beheld the considerable number and unparalleled fatness of the sheep here, compared with the horrid drought and aridity of the land. In this part of the country they always look out for the leanest in the flock; the tail alone of one of these sheep (which is thick, and of a triangular shape, being from a foot to a foot and a half in length, and sometimes above five or six inches thick near the rump) will weigh from 8 to 12 pounds, and mostly consists of a delicate kind of fat, which is eaten with bread instead of butter, and is used for dressing victuals."—Sharrman's Voyage to the Cape of Good Hope, vol. i. p. 300.

[‖] Burchell's Travels in Africa, vol. ii. p. 175.

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THE BUTTER TRADE.

(TO THE EDITOR OF THE NORTHERN WHIG.)

SIR,—I have long admired the course you have taken in your excellent paper, in disseminating agricultural knowledge. Your articles on that subject are so regular, and so well selected, that your journal is a very important acquisition to every farming community. Your notices of the proceedings of "The Flax Improvement Society" have been very interesting to me. I admire the great exertions of that patriotic body to improve the flax trade of the country; and nothing could tend further to shew the public spirit, energy, and prudence of the North, than the proceedings of the society. They find they are behind in the growth and management of this particular production; that the foreigner can shew a better article in the home market, and undersell us; that the true cause of this is a more judicious mode they have of raising and treating the crop. The Northerns do not resort to the usual course in such cases—embarrass and bore the Government and Parliament with remonstrances and petitions, calling for protection, for prohibitory laws, bounties, and monopolies. They take the true and legitimate course; they meet competition on fair ground; they take ways and means of improving the growth and management of the article, which is the only fair mode of procedure in such cases, and the sure way of combatting our rival.

Though I applauded the public spirit of this society, I am not so sanguine as many of my northern friends as to the ultimate results produced by the frequent cultivation of this rather capricious crop, and its intrinsic value, when all expenses attending its growth and management are taken into account, and the state of the soil after its growth; besides, from the nature of our climate and of the plant itself, I am apprehensive that the flax will continue a fickle and uncertain crop, and consequently unremunerative on an average of years; in fact, more so than our common grain crops.

As such a society has been already organized, and, of course, ready to act on any point for the public benefit, I would beg leave to call the attention of its numerous and respectable members of the nobility and gentry, and of the farmers and agricultural interest of Ireland generally, to a subject of tenfold more importance to the country than the flax crop—I mean the butter trade—which is at present in a more wretched, degraded, and unprofitable state than any other article of our native production. I say degraded—it is even so. I looked into the last *Mark lane Express*, and I saw the prices of butter in the London market—Irish butter, 80s. to 84s.; Dutch and Friesland, 120s. to 124s. per cwt.

Farmers of Ireland, say, shall this state of things continue? Will you remain in this most anomalous and degraded state? You prudent and industrious housewives, does this fact, staring you in the face, bring a blush to your cheeks? There is your butter selling at 84s., while the Dutch *Vrow* is selling here for 124s.; about 50 per cent. more. Her butter is purchased for the use of the aristocracy, the nobility, and gentry; for the hotels and the higher classes of the country and city; those who can afford the highest prices for the superior article. Yours is purchased for the lower classes of tradesmen, labourers, porters, or the West India negroes—the classes who can badly afford to pay for it. If, by a change of system, you could enhance the value of your butter 30, 40, or 50 per cent.; if, instead of 10d. you got 1s. 3d. per lb., how much would this assist in the payment of your rents, and add to your other means and comforts; for, trust me, it is not by your grain crops, but by your butter and pigs, you should pay your rents. During the last twelve months, the writer of this article has taken considerable pains to ascertain the true causes why our butter trade is in such a lamentable, depressed, and uncertain state, and why the foreigner has so far over-reached us and monopolised our best markets. For this purpose he has visited the two grand marts, London and Liverpool, and has found that there are two chief causes operating to produce the present state of things, viz.—the *bad quality* of the butter, and the careless and fraudulent manner of packing and branding it. The Dutch butter is most carefully packed, is all of one colour, sweet and fresh, and cured with a small portion of salt. It would be supposed that the milk or cream from which it was produced had all been churned at once, or in one day, so equally sweet and fresh is every part of the cask. On the contrary, the Irish butter is coarse, and carelessly made up, of various colours, perhaps fresh on the top, but rancid and bad tasted in the bottom, and all poisoned with an overdose of salt. It has been said, that the English merchants and people have conceived a prejudice against our butter, and given a preference to the foreigner. They have conceived a prejudice, and good reason they have had to do so, from always getting an inferior article; but that they have any unjust national prejudices against our butter is a statement contrary to the fact.

The London merchants would rejoice that we could send them a sweet, good article, that would successfully compete with the Dutch. They say—"Why don't you make up your butter sweet and fresh, and send it to us speedily while it is so? You are within four days, by steam; you have an immense advantage over the Dutch, who have a considerable sea voyage to contend with. Make your butter as we say, send it to us in good order, and we will pay you a long price for the article that will please our customers—and we can consume three times as much as you have to spare." The London merchants are altogether in the power of the Dutch importers during the winter season, and are compelled to pay them almost what they demand. They would be rejoiced could they fall back on the Irish market, and obtain what would please and serve their customers; but, at present, that is out of the question.

The second chief cause of the depression of our trade, and which is operating powerfully against us, both in the English and colonial markets, is the slovenly and fraudulent manner in which the butter is made up and branded. The merchant goes to the market and purchases—say twenty casks, marked "Carlow Firsts". When opened, he will find one-half, or more, salt Kilkenny butter; and so on of other brands, and other parts of the country, equally culpable. The dealer, being deceived and cheated must in future protect himself by a low price: a bad character goes abroad; here the fraudulent Irish exporter, for a temporary advantage to himself, injures the trade, and entails a permanent evil on the country.

Under these circumstances what can be done? Can any remedial measures be applied to these existing evils, and is it possible so to raise the quality and character of this important article of our commerce, that it may fairly compete with the foreign, and secure the home market to the Irish farmer? We think it is even possible to do so, and with slight exertion, which we shall hereafter explain.

Let it not be supposed that there is any peculiarity in the soil or cattle, which renders the produce of Friesland superior to that of Ireland. The proof to the contrary is positive. The case is (as in the flax crop), that it is the better management, the superior manufacture, which elevates the article above competition, and throws us into the shade. This point has been determined and fully ascertained. During last summer, a quantity of Irish butter was made on a new principle; it was consigned to an eminent Liverpool merchant, and ordered to be examined, compared, and put in competition with the Dutch. It was so, in the presence of the most eminent brokers and merchants of that city, and their unanimous opinion was, "that it was an immense improvement on the Irish butter; that it was equal to the best Dutch or English fresh butter." This butter stood open during three weeks in the heat of summer, and without deterioration; the process by which it was made is neither expensive nor troublesome, and shall, if necessary, be fully explained to the public in due time.

This instance sufficiently demonstrates the practicability of improving the article, and raising it at least to a level with the foreign, and ought to stimulate our public bodies, our merchants, and farmers to be up and stirring. There is not a subject of more importance to the Irish landlord and tenant at the present time than this; it is of great importance to the trader and consumer; in short, to all classes. It is now obvious that we must exert ourselves to meet the foreigner on his own ground, by a fair stand of competition, by producing as good or a better article. The days of protective duties, restrictions, and monopolies are numbered; a short time, and such laws will be blotted from the statute book. In the commercial world the motto will be "a clear stage and no favour;" therefore let us gird ourselves for the contest, and the sooner the better.

FARMING NOW, AND FARMING EIGHTY YEARS AGO.

(TO THE EDITOR OF THE HEREFORD TIMES.)

Sir,—Will you allow me a little space in your paper to give the trading part of the community some insight into the comparative position of farmers in the latter half of the last century and in the first half of this, by a comparison of the expenses upon a small arable farm, within a few miles of Worcester, in the time of a father with those in the time of his son. The statement is compiled from books:—

I.	In 1762, the father entered upon a small farm, consisting chiefly of arable land. He took a 21 years' lease, at 1*l.* per acre, tithe free. In the French war the rent was raised to 2*l.*	The son entered upon the farm in 1822, and still occupies it at the same rent his father paid in war time, and in a time of depreciated currency.
II.	The father's taxes of every description, government and local, did not exceed 5*l.* per annum for the first thirty years of his occupation. Poor there were none to trouble them, and the county rates were but small.	The son now pays nearly as much for poor, county, police, shirehall, and highway rates, as his father did for rent.
III.	The father hired his first carter to go with his team upon this farm for a year at 2*l.* 10s. wages, food and washing; this man lived with him four years, when he was risen to 3*l.* 10s. Before he left, this man went twice in one day to Worcester and back again, for dung, with his team, when he could be spared off the farm.	The son now pays 10*l.* and food, and when his team goes to Worcester for dung it goes but once, which is thought a good day's work.
IV.	The father paid nothing for the manure he hauled; the good citizens of Worcester in those days called after the farmers, and begged them to fetch their manure away, and they would give them plenty of victuals and drink for doing it—this saved the farmer sending victuals.	The son pays 10s. for a good load of sweeping's dung, bought by the ton, or 20s. for a good load of horse-dung by the ton; the father loaded his waggon with horse-dung as long as he chose, for 5s. a load.
V.	The father only paid a 6d. toll for his team at St. John's, and no toll upon the Old Bridge to enter the town at the bottom of Newport-street.	The son pays 1s. 8d. for his team, or else is put to 40*l.* expense to buy a new broad-wheeled waggon with flat soles, which goes a horse heavier than the narrow-wheeled waggon.
VI.	The father, at the time he entered upon the farm, paid his labourers 5s. per week, and drink; his women 2s. 6d., and drink; his wheelwright had 1s. a-day, and food; collar-makers not above half what the son now pays, nor were the blacksmith's bills so much by 40 per cent.	The son pays 9s. per week, and drink; his women 4s. to 4s. 6d., and drink; his wheelwright 2s. a day, and food.
VII.	The father and his labourers paid but 5s. a pair for their strong shoes; clogs, with leather tops and wood bottoms, 3s., which they often worked in in the winter; cow hides and skins as high as they are now—bark dearer.	The son and his labourers pay 11s. and 12s. a pair for their shoes; skins and hides as cheap as they were in the father's time—bark cheaper. This proceeds from the tanner, currier, and shoemakers, and their men, being taxed so heavily.

VIII. The father's labourer paid in his day but 40s. a year for his house and garden.	VIII. The son's labourers pay 4*l.* and 5*l.* a year for their cottages and gardens, with poor's rates; these the landlord should be compelled to pay.
XI. The father had timber allowed him, as stipulated in his lease, to keep his waggons, carts, &c., &c., in repair, and make new ones when wanting—it was called plough-bote; the implements were made at his house by a wheelwright at the shilling a day.	IX. The son has no timber allowed him, and he cannot get his implements made at his house now under 2s. per day and food—timber to buy.
X. The father sold 120 gallons of perry and cider, the old measure, and received 20 per cent. more than the son does for imperial measure.	X. The son sells 100 gallons, imperial, and receives 20 per cent. less than the father did, as the old measure was 120 gallons for the same hogshead, now 100 imperial.
XI. The father never sold wheat at less than 6s. per Winchester bushel, or 60lbs. weight, unless it was in the American war, when it was at 3s. 6d., but that did not last many months; then it got up to its former price, from 6s. to 7s. per bushel. He also sold in the French war and the depreciated currency time as high as 30s. This paid for the double rent, but bad seasons and bad crops were one cause, and paper money the other.	XI. The son has never sold his wheat higher than 9s. and 10s., and for the twenty years he has farmed the same estate, his prices will not average more than 7s. 6d. to 7s. 8d., having sold in 1834-35 as low as 4s. to 5s. per bushel, with double rent and local taxes nearly equal to his father's original rent.
XII. The father, who was a large hop planter, sold hops as low as 2*l.* 10s. per cwt., and as high as 35*l.* in the days of paper money; his hops were picked at 6d. per day and drink, when he entered upon the farm; and he never paid more than 8d. a day and drink.	XII. In twenty years the son has never sold hops above 8*l.* or 9*l.* the cwt., and then after failing years. He had not averaged 5*l.* per cwt. upon his whole growth, and pays 2d. per lb. duty out of that sum. His hops cost him for picking 10d. per day and drink; hop-dryer, a third more than his father paid, and hop-bagging a third dearer, &c.

I could go on still further; but I think I have clearly shewn how superior were the days of the father over those of the son who followed him. It shews what taxation does; the father had but little rent to pay, and no taxes worth mentioning—the son double rent, and nearly as much local and government taxes as his father had rent. It is therefore impossible for the son to be anything more than a good bailiff for his landlord; and tens of thousands of farmers are in the same situation. And yet, with all the son's improved management in draining, and the new artificial manures, which enable him to get better crops than his father did, he cannot make any profit. It may be asked, why he remains? The answer is, he is cultivating the farm he drew his first breath upon, where his father lived sixty years, and himself twenty years. This it is that makes him still cling to the *once* profitable spot. The great difference between the condition of father and son arises, I consider, from the change in taxation; the father buying cheap, and selling his produce at fair remunerating prices—except, as I have stated before, in the time of the American war, when wheat was at 3s. 6d. per bushel—while his son has a burden of government and local taxes to pay, and to buy everything he needs for his farming establishment dear. And here I may be allowed to make an observation relative to the low price of wheat in the American war, and the high prices in the French war. In the American war the crops of wheat were abundant, and the basis of the circulating medium was gold, which kept down prices. In the French war, from 1809 up to 1812 and 1813, we had wet and cold seasons to plant our wheat in, and the best cultivated clay farms did not yield or produce nine bushels per acre. This was one cause why we had wheat from 15s. to 30s. per bushel. In 1809, the year I began farming, and up to 1813, the land was so saturated with wet, that even the fruit trees left off bearing; we clay farmers, however, received no benefit from the high prices, having but little to sell after keeping the house, and getting the land planted again. Another cause was the depreciated currency. Paper money was abundant, and the working people had employment at high wages. Many farmers thought it was the war which made the wheat dear; but it was really owing to Pitt, who was obliged to suspend cash payments to enable him to carry on an unjust, profligate war against the French, for twenty-five years, which deluged Europe in blood, and the taxation, necessary to pay the interest of this, is crushing the industry of all the middle and working people.

Croft Farm, Sept., 1842. R. WINNALL.

MAIDSTONE FARMER'S CLUB.

The CHAIRMAN stated that the subject for discussion on that evening was the very important one of draining, and called on Mr. Rutley to introduce the subject.

Mr. RUTLEY then stated his views on the subject in nearly the following terms:—Feeling much interest on the subject for discussion this evening, viz., the use and best method of draining wet land, I readily answer to the call of the Chairman. I feel also desirous, early in the discussion, to make a few observations on the subject, not under the idea of being more competent or equally competent with many gentlemen here to do so, but more with a view of creating a discussion on the subject in all its bearings than the idea of being able to give much information on it. Knowing how much practical men—men of experience—differ on the best method of draining land, I have not the vanity to suppose my ideas on it are correct, or the mode I practise is the best one; for, although I

WHITFIELD EXAMPLE FARM.

The course of cropping adopted on this farm is that which takes off the same ground, alternately, a crop of roots or green food for stock, and a seed producing crop as food for man.

The following table shows the manner in which the farm was cropped last year, the way in which it is cropped this year, and the mode of cropping which it is proposed to adopt in 1843 and 1844; and as the course of cropping is uniform over the whole farm, the crop for any future year on the several fields may be easily ascertained by an examination of the table.

From this table it will be seen that clovers or seeds are taken once in six years; Swedes, turnips, or cole, once in six years; carrots once in twelve years: mangel-wurzel and potatoes once in 24 years; wheat once in four years; and corn, which may be oats, barley, beans, peas, vetches, or wheat, once in four years.

The whole of the clover or seed is consumed on the land by sheep, and all the root crop (80 acres) dunged every year with farm-farm dung, made in the yards or folds of the farm.

No. of Field.	Crops, 1841.	Crops, 1842.	Crops, 1843.	Crops, 1844.
1	Mangel-wurzel.	Wheat and Beans.	Swedes.	Corn, (*Wheat?*)
2	Oats.	Carrots.	Wheat.	Swedes.
3	Swedes.	Beans and Potatoes.	Carrots.	Wheat.
4	Wheat.	Clover.	Corn, (*Wheat?*)	Carrots.
5	Swedes and Turnips.	Wheat.	Clover.	Corn, (*Wheat?*)
6	Beans and Oats.	Swedes.	Wheat.	Clover.
7	Swedes.	Wheat.	Turnips.	Wheat.
8	Oats.	Mangel-wurzel.	Corn, (*Wheat?*)	Turnips.
9	Clover.	Wheat.	Mangel-wurzel.	Corn, (*Wheat?*)
10	Wheat.	Clover.	Wheat.	Mangel-wurzel.
11	Carrots and Potatoes	Wheat and Beans.	Clover.	Wheat.
12	Wheat.	Swedes.	Corn, (*Wheat?*)	Clover.
13	Clover.	Wheat.	Swedes.	Corn, (*Wheat?*)
14	Wheat.	Carrots and Swedes.	Wheat.	Swedes.
15	Swedes.	Wheat.	Carrots.	Wheat.
16	Oats.	Clover.	Corn, (Oats.)	Carrots.
17	Wheat.	Clover.	Clover.	Corn, (Oats.)
18	Wheat and Oats.	Turnips and Cole.	Wheat.	Clover.
19	Clover.	Oats.	Cole.	Wheat.
20	Wheat.	Clover.	Corn, (Oats.)	Cole.
21	Oats.	Turnips.	Potatoes.	Corn, (Oats.)
22	Oats.	Turnips.	Wheat.	Potatoes.
23	Old Grass.	Oats.	Clover.	Wheat.
24	Old Grass.	Oats.	Beans.	Clover.

ON TURNIP CULTIVATION.

Sir,—Having just completed an experiment in turnip husbandry exactly similar to the one reported in your Journal for 30th December, 1839, may I request your permission again to communicate the result through the medium of your columns?

Having selected two contiguous portions of a field, of equal quality, and land which in this country is considered excellent turnip soil, of the part thus selected one portion, exceeding an acre, was ploughed, the drills made up, manured, and the tillage completed, last autumn; the other portion was ploughed, the drills made up, manured in the spring; and both portions were sown with purple-top Swedes on the 10th May. Upon brairding, those on the autumn prepared portion had evidently the start, and kept in advance, so that they were ready for thinning four days at least before the other. The drills on the autumn prepared portion were 32 inches wide, and on thinning 15 inches were left betwixt the plants. The drills on the spring prepared portion were 28 inches wide, and only 12 inches were left betwixt the plants. And though the drills on the one were 4 inches wider, and the plants 3 inches of greater distance, yet such was the superior luxuriance of the crop that it covered the ground much closer than the crop on the other portion. In order to ascertain the comparative produce, two drills, one from each portion, measuring 429 links, were lifted in the beginning of September, and the turnips carefully counted and weighed. Those on the autumn prepared drill numbered 238, and weighed 82 stones; those on the other drill amounted to 276, and weighed 58 stones; thus giving an average of about 4lbs. 13 oz. per turnip in the one case, and 2lbs. 15oz. in the other. I may mention that from the autumn prepared portion many roots were found to weigh 12, 14, and 15lbs.; and, as a matter of curiosity, a single-horse cartload was selected, amounting to 141 roots, which weighed 109 stones, averaging 10lbs. 13oz. each turnip.

The crop was seen and examined by several agriculturists, who can attest its superiority; and the result has induced one or two in the neighbourhood to adopt this mode of preparation.

I may only add that the whole crop was lifted and stored by the middle of September, and that the ground is now sown with wheat.

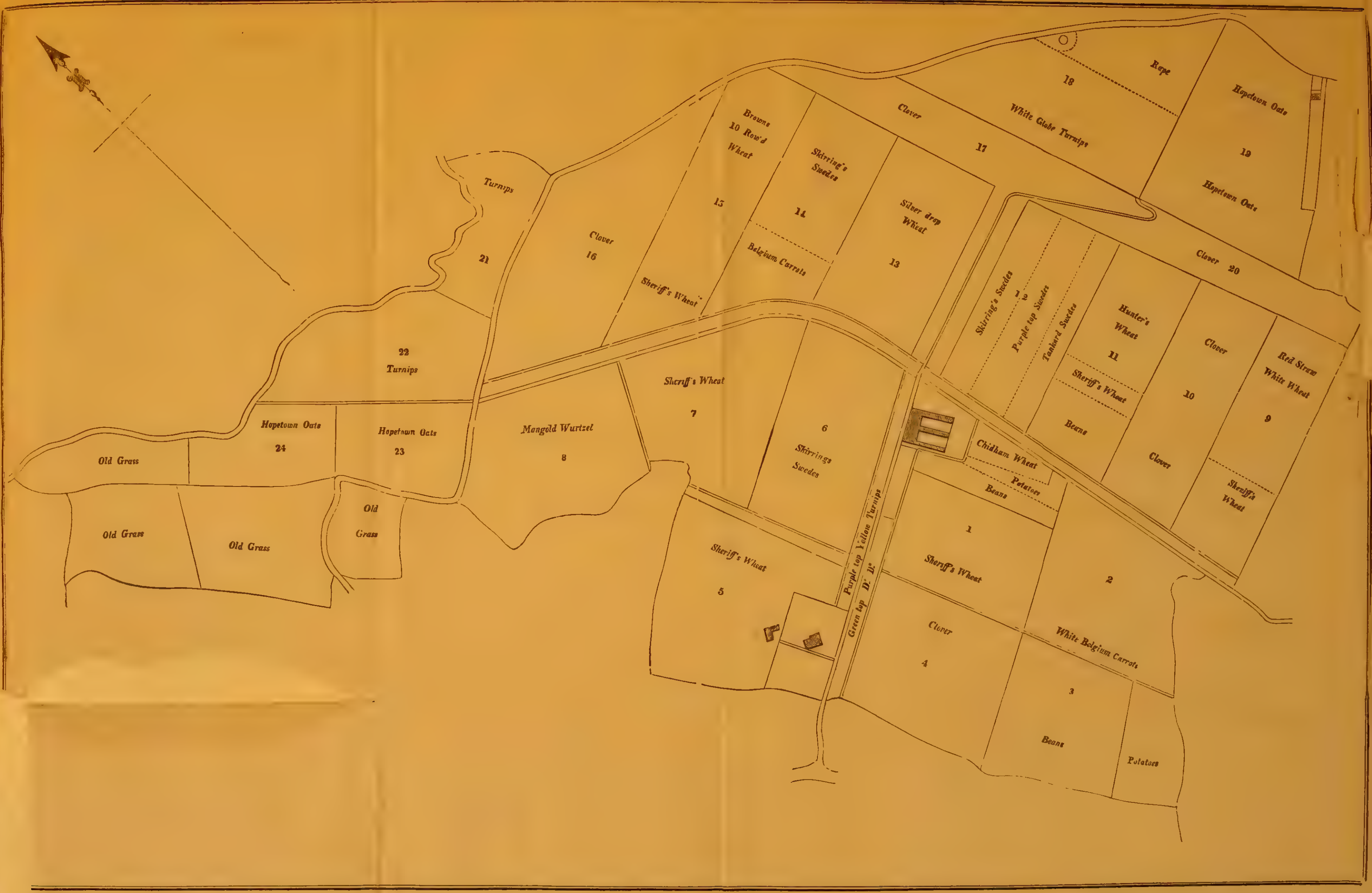
I am, Sir, yours most respectfully,

James Scougall.

Balgone, East Lothian, October 17th, 1842.

WHITFIELD EXAMPLE FARM;

SHEWING THE CROPS FOR 1842.



BURTON-UPON-TRENT FARMERS' CLUB.

JANUARY 20, 1842.

MR MICHAEL THOMAS BASS ON THE GROWTH OF BARLEY, AND HOW SEVEN QUARTERS PER ACRE MAY BE PRODUCED.

When I proposed to discuss the question, whether by a greater quantity of manual labour farmers might not at once increase the average produce of the land, and at the same time enhance their own profits, I did not sufficiently reflect that the subject was one which if it were properly treated would include a review of our whole agriculture. If my ability were enough to display the advantages of a more careful, and consequently more expensive, management of all the various operations of our husbandry, the time would be too short, even if you could allow me the whole year instead of one evening. I must therefore content myself with a very passing notice of many things which are nevertheless worthy of the careful attention of us all, and choose out one or two points which I consider of most importance, and invite your discussion of them. The whole subject is one of very great interest both to farmers and to every member of the community, since it embraces the consideration of no less matters than the finding a great amount of additional employment for our labourers, and of additional means of subsistence for our still increasing population.

When we call to mind that our population has very nearly doubled itself since 1800, and that it is still increasing, it behoves us to enquire whether those improvements in our agriculture which have hitherto enabled it to keep pace with the demand of the population for food may not be carried further, or whether there are no means left of getting a greater average yield from our fields. Now, if we decide that the average produce of our land is yet capable of increase, we say at once that there is room for additional labour upon our land; for there is no way of getting such increase but by means of more labour. But this is not exactly the point I wish to discuss, but rather whether those methods of agriculture which give employment to the greatest number of labourers be superior to other methods which employ fewer. There is a large breadth of our agriculture which would be immensely improved by adopting a good system of any kind, without any consideration of the question, which is the best of all methods. The draining of the land—the care of the fences—the improvement of the texture of the soil, by means of marl, &c., to our light lands, or lime, &c., to the heavy lands—its improvement by means of any of the mineral or chemical manures which experience has approved—lastly, the keeping the land in good condition by means of animal and vegetable manures, and the keeping it clean by assiduous tillage--all these things must be done on any system of good husbandry, and if they were well done over the whole length and breadth of our country, I do not doubt but that the average produce of our soil might yet be nearly doubled, and at the same time there would of course be required an immense amount of manual and other labour. But though all which I have mentioned may be done, and profitably done, there is yet a difference in our methods of doing them which will make a vast difference in the result, both as regards the whole bulk of the crops and that part of it which the farmer takes as his own share of the profit. It is not a slovenly and beggarly farming which I wish to contrast with one that is clean and improving, but one way of rich and diligent farming with another; for I suppose there are but few farmers now-a-days who are not pretty well aware that the ground will make a more generous return to those who treat it generously; and it is generally a sign of poverty more than ignorance when we see negligent and beggarly tillage. But we may be very diligent and very careful in pursuing a very faulty method, and though we may command a degree of success and of profit, we may not reap all that the land is capable of yielding if our method were better.

I pass by, then, everything relating to the subject which does not admit of two opinions, and take it for granted that everybody will agree with me in thinking it beyond dispute, that to have the land in high condition, and to preserve it clean, are essential requirements of good and profitable farming. Yet there is perhaps room for difference of opinion as to what constitutes high condition in land. When in another place I estimated the produce of good barley land well managed to be seven quarters per acre, I was thought by very many of our farmers to have over-rated the capabilities of the soil. The opinions of others, however, have failed to convince me that I was wrong in my estimate, for when opinions are founded on facts which come within the scope of our own observation, it takes a good deal of argument to rid us of our errors. I therefore adhere to what I formerly said, and I repeat that on our best barley lands our best crops will reach seven quarters per acre in the best seasons. You must not believe that I said the average return on any kind of land could approach seven quarters of barley per acre. But though you will not doubt that the crops on my own farm have taught me that so large a yield may be grown, it is, I admit, quite another question whether, to attain such a result, we must not waste either manure or labour. I can only say that I fully believe that such a result is in the power of every farmer, and that the land will pay the highest rate of profit which has manure and labour enough applied to enable it to bear the maximum bulk of crop. As we may differ as to the greatest profitable degree of condition of the soil, so also we may differ as to the highest profitable degree of cleanliness; and besides the absolute cleanness there may arise many differences as to the various times and means of cleaning our land. It is indeed in respect of this last point that one mode of farming differs most from another, and it is the point which I have chosen to dwell upon, because it is according to our choice of one method or another of keeping the land clean, that the quantity of manual labour we employ is chiefly determined. In the means we adopt to repair on our arable land the waste the corn crops occasion, there is a very material difference, not only according to the nature and quality of the soil, but also according to the particular method of farming we pursue, and the average amount of labour any given quantity of land requires depends in an eminent degree on the kind of crops which succeed each other in what we call a course of husbandry.

The great principle of all good agriculture is to make each acre of the land maintain itself in heart, to effect which object we grow cattle crops which repair by the manure the waste which the corn crops occasion. Experience teaches us what proportion to observe between the two kinds of crops, and as the native fertility is, so must the one or the other kind be more frequent on our land. There are various courses recommended for each particular kind of soil, but all having for their aim the attainment of the same object. I take it that any course is good which ensures us in every season as much as the land will carry of some useful kind of crop, either for the food of man or cattle. The chief difference between the various courses, in relation to the quantity of labour the land requires, consists in our keeping the land at rest in seeds and grass for more than one season, or in our never suffering any kind of crop to remain on our land more than one year. The labour on grass land is of course insignificant in comparison with the labour upon tillage, and therefore if we do but keep our land in grass two years in five instead of one in four, we diminish the labour on our land by nearly a fifth. If there were any kind of green crop which would produce as much food for cattle in the second year as the first, it would be extreme folly to incur the expense of an annual tillage of the land. We might then keep our land in tillage for corn crops two, three, or four years in succession, and then in green crop the same time, and thus save half the tillage we bestow on our present most approved courses. And this is indeed what is attempted in a great deal of the farming in this district, where land is suffered to be what is called up and down. I leave it to you all to say whether the average produce of the three years' grass, after the first seeds, usually more than equals in nutritive value the produce of a good crop of turnips or of vetches, or even of seeds. Now, if a good crop of either of these last be not more than sufficient to supply manure enough to replace the fertile power which one corn crop takes away, it is evident that unless there be some virtue added to the soil by the mere rest, this system at any rate is one which does not enable us to get from the land all it is capable of yielding. I am not sure that there are not farmers who do believe that mere rest in grass is a cause of the land's increase of fertility, but I suppose every person who has studied the matter at all, knows that land is enriched, not by rest, but by the quantity of food which cattle consume on it, or in other words, the quantity of manure it returns. If we contrast the total produce of food for man and beast grown on a given quantity of land by pursuing the Norfolk or four-course shift, and a course which keeps the land in tillage four years and then in grass four years, I think it would not be estimating the difference too high if we lay it at one-fourth. There must, therefore, be necessarily a loss to the country of so much produce, whether the farmer adds to his profit by this system or not. I am inclined to think the system is as bad for the farmer as for the community, and that it is better for both to give additional labour to the land, and thus gather every year all it is capable of yielding.

The system of alternate grass and tillage which under our ordinary management is so manifestly unproductive, is nevertheless held by many eminent agriculturists to be capable of such a degree of improvement, as would convert it from one of the worst to the very best method we can pursue. It is held by these authorities, that to keep land in permanent pasture is a loss, because the manure cannot be so profitably employed as in tillage lands, and that instead of keeping one part of our land in grass and another part in tillage, it were better to use each alternately for each purpose. This is perhaps very good in theory, but waits, I believe, for introduction into our practice until the primary difficulty be removed, which is a sure method of laying down land in grass, so as to reap from it as large an average crop as we do from our permanent pastures. When this difficulty is overcome, it will be high time perhaps to speculate further on the advantages of the theory generally. Meantime, it would be one of the greatest benefits any member of this society could confer on it, in my opinion, if he would bring forward the subject of converting tillage land into pasture, and show how, by a superior way to that which is usual, and by the employment of additional labour in the beginning, our practice in this respect might be infinitely improved. There is some kind of land which requires this alternating system, and on certain occasions it is extensively required in the country generally. For instance, when a succession of two or three or more unfavourable seasons have exhausted our usual surplus stock of grain, and the higher price tempts the farmer to extend his tillage further than usual, then when a favourable season or two have given us good crops on this more extended surface, we are again compelled to narrow our tillage by converting back again to grass what the hope of high profit had tempted us to plough up.

In passing, I may remark that this extension and contraction of the tillage has a bearing of the most weighty kind on a question which does not admit of discussion in this place, but on which it behoves us to gather up any facts which throw light on it, wherever they may chance to be brought to our notice. I recur to my subject, and quit this part of it by remarking that it seems to be the best practice to pursue a course of tillage which, though it requires a greater amount of annual labour, yet yields a greater return than a course which requires less labour; and further, that if we are to pursue the alternate grass and tillage plan, it behoves us to apply additional labour at the time we lay down our grass, in order to secure a greater yield in the first years of its growth. I think I may say that there is in this province great room for the employment of more than the usual amount of labour. There is another question immediately connected with that of our choice of a course of husbandry which, according as we decide one way or another respecting it, would lead to a great difference in the amount of labour we employ on our farms. We may consume our green crops on the ground, or we may gather them, and afterwards consume them in our sheds and yards. It is manifest that in proportion as we pursue one or other of these ways, we shall require more or less manual labour. Without going into the question of summer soiling (of which I shall only remark, that I conceive it has not had a fair trial in this country, because there has not hitherto been accompanied by the necessary condition of its success, viz., an adequate provision for the preservation of that most valuable article, the urine of the cattle), I think there is still great room for an extension of the plan of gathering the crops previous to their consumption by cattle in the winter. To keep our cattle as well in the winter as we do in the summer, we require a considerable quantity of gathered food, and I think you will all agree with me that as much food as is necessary for this purpose should be provided, and if we are to consume our straw, there needs to be mixed with it a pretty large proportion of more generous material, both for the health and growth of the cattle, and in order to add value to the manure they make. I should say that the surest sign of a well-doing farm is when we see the stock well kept in the winter. We often see on the same farm sheep penned on the turnips, trampling their food in the dirt, and covering it with ordure and urine, and young stock in the yards eating nothing but straw; while if the sheep were consuming their share on some pasture which had been mown and needed top-dressing, and the young stock were furnished with that part which the sheep waste, a good return would be made to the farmer for the expense of gathering the turnips, in the growth of the stock, and the manure of his straw-yard would be much increased in value. Another part of our agriculture, in which there is some place for the profitable employment of more manual labour, is in the care of the manure. On the proper mixture and turning of the manure depends a great deal more than farmers generally seem to be aware. Whatever opinions we may hold as to the great question, whether manure should be made to undergo a long fermentation, every authority, both practical and theoretical, agrees in the opinion that a certain degree of fermentation is necessary, and that unless we induce it properly that much of our manure will be spoiled. To do this rightly we must take more trouble than we usually do, and of course employ more manual labour. I do not go further into this subject, because the gentleman who has engaged to bring it forward will, I am sure, handle it much better than I am capable of doing.

When I proposed to open this evening's discussion, I did not intend it to include the seven quarters of barley per acre question; but since it appears against me, I must beg to say a few words in support of my opinion. To grow seven quarters per acre implies a very high degree of richness in the soil. Now, I suppose nobody doubts that the soil may be kept wastefully rich, as well as wastefully poor. If it be not rich enough to yield as large a crop as it is capable of bearing, land is too poor; and if it be fuller of animal and vegetable remains than is necessary to secure this result, it is of course wastefully rich. I do not doubt that we may enrich the land until it is able to bear seven quarters per acre, and the question is, whether when we do this we do not waste some part of our manure. Suppose, now, that land is at the pitch of condition which is necessary to grow from three to five quarters of barley, or an average of four quarters; to produce this effect, suppose there needs in the soil an accumulated stock of manure to the amount of four per cent. of the soil, and an annual addition of four tons of manure. Then, if we require to raise the condition of our land to such a pitch as will enable it to grow from five to seven quarters per acre, or an average of six quarters, should we require more than six per cent. of accumulated stock in the ground, and an annual addition of six tons of manure? I apprehend there will not be two opinions on this point, but that we shall agree that up to a certain point a certain quantity of manure will repair the land for a certain quantity of crop, and in like proportion, whether we take large crops or small ones. It follows, then, that if we can keep our green crops which are to supply the manure as large in proportion as our corn crops, that our land will maintain itself in heart precisely in the same course of succession of the two kinds of crops, whether we preserve it in high or in low condition. There is needed only the first outlay in laying up in the soil the accumulated store of vegetable matters, and the only difference in the expense of good or beggarly farming is the interest on the additional capital which we thus bury in the soil. I need not go about to prove that the increase in our crops will repay us for this outlay, since the experience of every person who has tried it will assure him that the system is a profitable one, and every one who has not tried it sees his neighbour who practises it grow comparatively rich, that is, if he be one of those who remember that the profits of farming consist of savings as well as gains. Since we have no other way of enriching our land but by consuming more of our produce by cattle, it is obvious that where we have not access to a supply of extraneous manure, that we must pursue one or other of two methods—either we must suffer our land to lie in pasture until it has acquired the additional riches, or we must grow green crops more frequently on our tillage lands, and also consume a part of the green crop with cattle, so as gradually to increase the manure in the land. According as we pursue one or other of these methods, we should require more or less labour on the farm. But it is to be borne in mind, that though we might lay down our land in pasture, and so employ less labour, yet that we could not contract the tillage without creating the extension in some other district, in order to supply the demand for the usual quantity of corn. Say, for instance, that a million of acres of wheat land were laid down in pasture in any year, there would ensue a demand for the three millions of quarters of wheat these million acres were wont to supply, and another three millions of acres of pasture must be broken up. The result, then, of any increase of the richness of our soils would be brought about by the employment of additional labour, whether we pursue one method or the other of attaining that result.

But let us enrich our land as much as we will, I grant that we shall never attain to the seven quarter per acre pitch on the ingenious system which seems intended to include the business of two seasons in one. We must grow a corn crop one year and a green crop another, for the land will scarcely bear a good yield of both together. A crop of corn and an undergrowth of weeds, although the ploughing in of the weeds in the autumn may render unnecessary a small quantity of manure, will never produce so much as a corn crop alone, and therefore it is worth enquiry whether our corn will not repay the additional labour of destroying the weeds. It is not my purpose to enter on a comparison of the advantages of the drill system and of the broadcast. It would take up more time than could be spared me, and I should anticipate a discussion which Mr. Greaves will introduce with a greater advantage of practical knowledge than I possess; I therefore confine myself to what seems necessary for my present purpose of showing that a greater quantity of manual labour may be advantageously employed in our method of tillage. The drill system seems to me to be capable of being divided into two branches, either of which is suited to certain circumstances, and may be supported by its own arguments. We may drill for the purpose of allowing spaces to give such a thorough tillage to the land as may serve instead of a fallow, and preserve the subsequent crop from weeds: or we may drill for the purpose of giving our land such hoeing and weeding as may be effectual to preserve the immediate crop from the weeds. In one case we do not look so much for an adequate return for our labour in the crop itself, but are content with avoiding the necessity of a total fallow. In the other we look to be repaid in the particular crop to which our labour is required. A good deal of difficulty has been experienced in the more universal diffusion of the drill system for want of a proper observance of this distinction. The drill system has also been mingled with errors in theory which have led to numerous failures in practice, and these require to be separated from it before we can come to a right judgment on its merits. The simple and characteristic excellence of the drill system is, that it gives facilities for cleaning the land while it lies in crop, but it might almost be thought that this was a matter of only secondary importance, so much stress has there been laid upon other advantages which have been attributed to it. While the old notion prevailed, that the land acquired, in some inexplicable way, new fertile properties from being exposed by continual tillage to the atmosphere, it was thought that so much stirring with the horse-hoe would stand in the place of so much manure. I am not quite sure that this error is perfectly exploded, for one often hears farmers talk in a vague way of the benefit the land receives by being "ærated," as it is called, and they will defend the practice of summer fallowing on account of some fancied effect of this kind. We know now-a-days that all a fallow can effect is to destroy weeds, and all that mere stirring between the rows of plants can effect is to abate the weeds and promote the fermentation of the nutritive materials we have already buried in the soil. Then it has been argued that the saving of seed should be a main consideration, and that drilling effects a great saving. One would think it difficult to understand why few plants should produce a good crop merely because they are planted in rows, instead of being scattered equally over the whole surface of the soil. If land be of rich quality, each individual plant will grow to a larger size, and will consequently draw its sustenance from a larger circle, and hence it requires fewer plants to cover a space on rich than poor soil. Now certainly, inasmuch as the stirring of the earth between the rows does promote the quicker fermentation of the manures within its bosom, and inasmuch as the abatement of the weeds does leave more nutriment for the wholesome plants, it is undoubtedly true to some extent that we can grow plants at larger distances when we drill than when we do not drill. There is also some saving of seed when we drill, because by drilling we are enabled to sow our seed at an equal depth, and thus avoid the waste of some seed which by the broadcast method is cast too deep or too shallow to ensure its growth. But it appears to me that any advantage we derive from this saving of the seed is almost inignificant in comparison of the other real advantages of drilling. In choosing the distance at which we should put our seed in the ground, I should say that we should find out that distance which by the broadcast method would ensure us the largest yield and exactly adopt it. The distance will be varied according to the kind of plant and the nature and condition of our land, but the same distance which gives a large crop of broadcast will also ensure us a large crop of drilled corn. There is no doubt but that it will occasionally happen in an unusually fine season, when the land has been excellently tilled and the seed well put in, that we shall obtain a surprising crop from few plants at large distances, and these occasional successes being much vaunted, have perhaps served to cover the numerous unsuccessful experiments, and thereby led to the imitation of an erroneous practice. But these happy hits must be rare, and in common seasons our plants will usually be no larger at large distances than when we put them closer together. If we intend, then, to be remunerated for our additional labour in tillage by a greater yield in our crop, we must plant at such distances as experience proves will give the greatest yield in common seasons and common circumstances. We must not plant at this or that distance to suit the hoe, but make our hoe accommodate itself to the plants. These observations, you will see, do not at all apply to those cases where we drill to avoid the alternative of a fallow, or any case where our land being foul, we incur expense in cleaning the immediate crop, in order to avoid it in the one that succeeds. For instance, if we prefer to drill beans, or any other plant which requires the largest space, in order to horse-hoe between the rows so as to destroy the root-weeds as we do in a summer fallow, we are repaid if we do but secure half or three-fourths of a crop, provided the hoe does the work as effectually as the plough and harrows, because whatever we gain in the crop is clear gain, minus the manure the crop has consumed. But if we look to be repaid in the immediate crop, then I contend that even in those plants which admit of the horse-hoe, we must have the same number of plants on a given space, whether we sow broadcast or drill. It seems to me, then, that we should always bear in mind the purpose for which we drill, before we boast of the large crops or complain of the small ones we grow by means of drilling. If we drill to avoid fallowing, do not let us complain of a short crop; but if we drill for profit, do not let us plant at such distances as will not ensure a good crop, and then complain of the system instead of our abuse of it. I leave that branch of the drill system which proposes to supplant fallowing by the horse-hoe to be handled by Mr. Greaves, who I trust will meet with much assistance from the gentleman who is so earnestly endeavouring to extend its practice among us, and will confine myself to the other branch, by which we propose the easier task of quelling with the hand-hoe and by hand-weeding the weeds which infest the immediate crop. The question is, whether the yield of an acre of corn will when hoed and weeded repay the cost of the additional labour it has caused. I have not the least doubt it will in all cases where the land is of average fertility and in good condition. Let any one contrast a crop grown after a clean fallow with the subsequent crop on the same land (supposing that the waste of the first has been repaired), and he will know by how much a clean crop is superior to a foul one.

I do not think I over estimate the average increase of crop caused by a thorough hand-hoeing at one-sixth of the whole. I may just remark in passing, that supposing I am right in my estimate, the difficulty of growing seven quarters is lessened, for every body will think six by broadcast not more than we may hope to arrive at, and six broadcast would be made seven by drilling. But, though the hoeing may pay on good land, will it pay on bad? I should say that it will pay in proportion to the total yield of the crop. We are to bear in mind that poor land will not be so thoroughly occupied by the useful plants, and that consequently there will be more weed and more labour in quelling it, and that this greater labour will not produce so great a result in the crop. Say, for instance, that a three quarter crop is increased one-sixth, or half a quarter, by the hoeing, a six quarter crop will be increased one-sixth also, or one whole quarter; thus giving us a double return for less labour. Weeds will grow more profusely on rich land than on poor land, but if we make land rich enough to afford sustenance to the useful plants of agriculture, these will get possession of the land, and will prevent the growth of the weeds; but if we have our land poor, the useful plants, not finding sufficient sustenance, will not be able to possess the soil, and the weeds will therefore spring again, though we may hoe them down in the early stages of the growth of the plants. We have therefore taken one most effectual step towards eradicating the weeds when we have made the land rich enough to bear their more generous rivals. Nevertheless, when the weeds and the corn start fair on good ground, the weed will be as abundant as on poor ground; but if we hoe them down twice, then the useful plants will through their whole growth preserve their superiority in the good ground, while on the poor, the weeds being on their native bed, will still dispute it with advantage. Hence it is that those who have not made it the first step to get their land in good condition have not put themselves in a position to seize the benefit which the drill system offers. I do not doubt, then, that the absolute increase in the yield of any crop will repay the cost of hoeing, and there are also many indirect advantages gained by the same operation which are by no means to be overlooked. By means of that admirable implement, the presser, we are enabled to hoe and clean our turf corn crop as well as the others, and by this means a large amount of labour in the preparatory tillage is superseded. It may be thought that the superficial hoeing can have but little effect in destroying the root-weeds, but I may appeal to every person who has diligently hoed all his crops in the course to bear me out in saying that the turnip fallow will not require half the work to be done upon it. It is now customary with me and with my neighbour Mr. Greaves, to take a green crop before the turnip fallow, if indeed that can be properly called a fallow where the land is not free from crop more than two or three weeks. If we consider how root-weeds grow, and by what means they may be destroyed, we shall easily conceive how the hand-hoeing may have a very great effect in quelling them. For the most part they grow under-ground in exact proportion to their growth above ground, for every plant requires that the juices should be prepared by undergoing certain processes in the leaves. To prevent the growth of the leaves is therefore to prevent the growth of the roots which are nourished by the juices which have passed through the leaves. Almost all our most pernicious weeds may be eradicated by the simple process of cutting off the first shoots as often as they appear above ground, and if we were to take a piece of ground infested with our most hardy weeds, and instead of turning it over to the sun, as we do our fallows, were merely to hoe it over every few days during the whole year, we should most effectually stop the growth of the roots, and indeed destroy most of them. This mere cutting off the supplies from the roots has, I suppose, no inconsiderable share in assisting us in the labour of the summer fallow; for, though it would be absurd to say that the sun is not the chief agent in destroying the life of the weeds, they are rendered less tenacious of life by being weakened for want of nourishment. It is also, I conceive, almost entirely in this way that the horse-hoe does its work of abating the weeds almost as effectually as a summer fallow. The common notion is, that the horse-hoe stirs the ground deep enough to expose the root-weeds to the action of the sun, but I suspect that it is chiefly in cutting off again and again the first shoots of the weeds that its real efficiency lies; and in this the horse-hoe is well imitated by the hand-hoe. If there be any truth in this principle, of the dependance of the growth of the roots upon the growth of the leaves of weeds, how absurd is our present practice of letting our stubbles lie covered with weeds sometimes through the autumn and sometimes the spring, instead of scuffling up the weeds and casting on the soil some useful plant to occupy it until the time comes to sow our annual crop.

Though I have but imperfectly executed the task I have undertaken, I trust I have shown that in many ways there is yet space for the further progress of our agriculture by the employment of additional labour. In almost every branch, too, where additional labour might be employed, it would consist chiefly of manual labour. In our ordinary methods of tillage we employ as much horse-labour as would be required if our crops were ever so much increased, and indeed the horse tillage on poor land is greater than on good, if we would keep the two equally clean. Whatever additional manual labour we employ in the cleaning our crop supersedes a portion of our horse tillage, and if it be equally profitable to the farmer to use manual labour (and I have no doubt it is), it is surely a great advantage to the nation that the food which we grow should go for the subsistence of men rather than horses.

Whether I am right or wrong in my opinions as to the means by which we are to attain the result, certain I am that the result I wish for is what should be aimed at. To enrich our land until it will bear as much corn as can be borne without wasting our manures—to adopt such a course of tillage as shall ensure every year a full crop of useful plants—to apply labour wherever the returns will remunerate us—these should be our objects; and the whole art of farming consists in pursuing them with the most economical use of our means of effecting them. I think I may say with confidence that the nearer we approach to this standard of a perfect agriculture, the more we as farmers increase our own profit, and at the same time benefit the community. I hope to see my opinions confirmed this evening by a society so well able to judge of them, or otherwise to see reason to think

I have been misled by errors. Though it cannot be but that every one of us would rather be found on the right side in his opinions, yet I would always prefer to be set right than continue in the wrong.

LLANDOVERY AGRICULTURAL SOCIETY.

The Annual Cattle Show of this Society took place on Wednesday, Sept. 21, in the Castle Yard; the weather proving favourable after the excessive rain the day before, rendered it much more pleasant for the exhibition of the cattle, &c. Early in the morning the town was enlivened by the noise and bustle of driving the stock into the show-yard; the bulls complimenting each other as they passed to the place of contest, but happily they were not allowed the trial of prowess to decide the victory. The stock was more numerous than in former years, and we noticed some very fine animals, as well those that contested for the premiums as others exhibited as extra stock, which may be taken as a good omen for the future progress of this useful and flourishing society. 27 premiums were awarded for the stock, and 9 other premiums for draining, turnips, potatoes, best cultivated farms, best servants, &c. The ordinary was held at the Lamb Inn, and was well attended; the Rev. E. H. G. Williams, President, in the Chair; Wm. Jones, Esq., of Glanbrane Park (in the regretted absence of his brother, D. Jones, Esq., of Glanbrane Park, Vice-President), occupied the vice chair; both chairs were ably supported by several gentlemen, who in the course of the evening evinced their practical knowledge of farming by a description of their successful experiments, and general plans of farming. The dinner was all that could be wished of the choicest qualities in profusion; a positive proof of the practical knowledge possessed by the landlord and landlady, Mr. and Mrs. Jones, in providing for the comfort and enjoyment of their guests. After dinner the worthy President called upon Mr. Williams, of Manest Court, for his report as Judge of cattle, sheep, &c., which upon being opened, the following numbers and names of the successful candidates were announced:—

No.		£
5.	The best red bull, to the Rev. J. Morgan, Talyrhyn	3
10.	The best red yearling bull, to Mr. Jas. Jones, Llwyndewi	2
8.	The best black bull, to Mr. Davies, Froodvale	3
13.	The best red cow, to Mr. Charles Bishop	3
18.	The best red heifer in calf, to Edward Jones, Esq.	3
28.	The best red yearling heifer, to Mr. Jones, Cynghordy	3
25.	The best pair red yearling steers, to Mr. Jones, Llwyndewi	3
	The Premium given by Mr. Watkins, Forddvawr.	
31.	The best black cow, to Mr. Jones, Penyhont	3
32.	The best black heifer in calf, to Mr. Jones, Llwyndewi	2
34.	The best black yearling heifer, to ditto	1

HIGHLAND CLASS.

38.	The best red cow, to Mr. D. Joseph, Aberdyfnant	3
41.	The best red heifer in calf, to ditto	3
44.	The best red yearling heifer, to Mr. D. Price, Penrhiw	1
47.	The best black cow, to Mr. M. Griffiths, Glantoddeb	3
50.	The best black heifer in calf, to Mr. M. Rees, Tynywaun	2
52.	The best black yearling heifer, to ditto	1

LOWLAND SHEEP.

No.		£
53.	The best young ram, to Mr. C. Bishop	1
59.	The best aged ditto, to Mr. Jas. Jones	2
61.	The best pen of 5 ewes, to ditto	2
67.	The best young ram, to Mr. M. Rees	1
69.	The best aged ditto, to Mr. D. Joseph	2
74.	The best pen of 10 ewes, to ditto	2
78.	The best boar, to the rev. Mr. Morgan	2
79.	The best sow, to Mr. Jas. James	1
82.	The best hackney brood mare, to Mr. C. Bishop.	2
86.	The best cart brood mare, to Mr. Davies, Neuaddfach	2
90.	The best hackney filly	2
	The gift of Mr. D. Prosser, of Glanmynis.	

In continuation was read also the report of Mr. John Evans, of Alltycadno, who had undertaken the duties of inspector this year, viz.:—

DRAINING.	£
1st premium, to Mr. M. Rees, 336 perches	5
2d ditto, to Mr. Davies, Froodvale, 220 perches	3

TURNIPS.

1st premium, to Mr. H. Jones, Cynghordy	4
2d ditto, to Edward Jones, Esq	2
1st ditto (another class), to Mr. M. Rees	3
For the best cultivated farm, to Mr. M. Rees	3

POTATOES.

To John Morris, Berthlwyd, Gwynie	1

BEES.

1st premium, to David Williams, Tynywaunwen, Pentretygwyn, nine hives	1

SERVANTS.

Wm. Williams, 20 years' service to Mr. Price, Glancrychan	1

The announcement of the premiums gave general satisfaction, as might have been expected from the decisions of the judge and inspector, whose extensive and practical knowledge of agriculture in all its branches enabling them to fulfil their relative duties with judgment and accuracy. The Society were favoured this year with an exhibition at the show-yard of a small assortment of cheap and useful agricultural implements, brought down by Messrs. Hodges and Wright, manufacturers, from their extensive stock at Brecon; among the implements we noticed the barley stumppen, which thrashes out the grain without injury; a horse-rake upon a new construction, wherewith an immense quantity of hay or corn on ground can be clearly and properly raked in a very short time without much labour; an everlasting economical rack and stand for feeding sheep, whereby more than half the usual food may be saved; a well-contrived chaff-cutter, with the knives fixed in a heavy wheel that can be turned with ease; this is an excellent implement, and which no person should be without who has a horse or cattle to feed. Our time was too much otherwise occupied to inspect the whole, but from what we saw we feel satisfied that a journey to Messrs. Hodges and Co's. manufactory would be amply repaid by the procuring of such implements as would lessen labour and expense in farming. Among the numerous toasts given after dinner, were "the Patron of this Society;" "Success to the Derylls Agricultural Society;" "the Breconshire Agricultural Society," &c., &c. Hilarity and friendship were the order of the day, and the meeting did not break up until a late hour.

GLOUCESTER FARMERS' CLUB.—The meeting of this club, held last Saturday se'nnight, was very numerously attended. The subject fixed for discussion was, "The best description of plough for particular soils, with the best method of performing the operation as intended for different crops." The subject had been undertaken by Mr. John Morton, of Chester Hill, but as his attendance was prevented by unavoidable engagements, his place was supplied by his son, Mr. J. Morton, jun., of Whitfield Example Farm, who commenced by laying down the following propositions, which he afterwards proceeded to prove and enlarge upon:—

first, that the best method of ploughing is that, which whilst it leaves the soil most free and permeable to air and moisture, at the same time exposes the greatest extent of fresh surface. Secondly, that no varieties of soil or modes of cropping can justify the numerous varieties at present existing in the form of the plough; that the mouldboard is the only part of the plough which requires to vary with the soil; and that the addition of a wheel to the framework of the plough is practically injurious. Mr. Morton's paper was one of considerable interest, but space will not allow us to give an epitome of it. It was decided that the subject for discussion at the next meeting on the 15th of October, should be, "The making and management of farm-yard manure," to be brought forward by Mr. Alfred Gyde, of Painswick.—The Sweep-takes for decision at the January meeting were closed.

THE CORN LAWS AND THE TARIFF.

Sir,—In venturing to affirm that the present corn laws and the new tariff are unsound in principle, and will be found ruinous in their results, I by no means intended to attack the doctrines of free trade (for ultimately, only from the reaction which may be expected from the practice of those doctrines to the fullest extent, can the agricultural interest *now* be permanently and efficiently benefited), but to expose the inconsistency and dangerous tendency of a stringent corn law, and a lax tariff as regards stock and animal food. I cannot but think that the upshot of this system will be to force the capital of the foreigner to be employed in pastoral pursuits to a greater extent than heretofore, forsaking in the same degree the raising of grain, &c.; whilst on the contrary, our capital will be forced, by the greater foreign competition in "pastoral," and the lesser competition in "arable," pursuits, to be employed mainly in the latter. And what will be the result? The foreigner will obtain the largest profits, from the more costly and higher branch of agriculture being opened to his hand, and his land will continually improve in condition from the increase of his live stock, and extension of pastures; whilst we shall get only the lesser profits of a corn-growing country, with a constantly depreciating conpetion of the soil, from the gradual abstraction of the stock, and the more extensive employment of the plough. These changes will be slow of course, but they appear to be inevitable, from the operation of a law partly prohibitory with respect to corn, but not anywise prohibitory with regard to live stock and animal food; hence, I say, the principle is unsound, and the practical result will be found injurious, nay ruinous to the present system of British farming.

If we are to maintain our present system of stock farming, the alteration of the corn law to a low fixed duty, even below the level of that which regulates the importation of live stock, &c., I hold to be a *sine qua non*. But we are at present on a different tack, and the effects are already apparent, and in correspondence with the views I have endeavoured to explain. Upon what principles the present ministers have founded their legislation with regard to these matters, I have never heard explained, nor is it possible to conceive them, and we are compelled to infer that it is the result of gross ignorance, preposterous self-esteem, or a dark and deep design to subvert the interests of British agriculture; but looking at the chief actors, we feel at once assured that this last motive had nothing to do with it, and that to one or both the former causes must it be attributed.

In accordance with these views, it is desirable that as British farmers we should seek to obtain the abolition of the "sliding scale," and the adoption of a low fixed duty, the repeal of the malt tax, the destruction of every monopoly under the sun if possible, and the regulation and adjustment of the debt due to the national creditor, in accordance with the change *in prices* effecting through the operations of certain "acts" of the legislature, in order that we may obtain the benefit of that "reaction," which is now the only hope left us, and I believe we may safely rely upon it, which can only be expected as the result of the fullest expansion of trade and commerce, which a perfectly unrestricted system will allow of. The present rents cannot be much longer obtained by our landlords, unless, like men of honour, courage, and discernment, scorning all lesser, meaner considerations, they shall determine to act upon principles of strict justice and true patriotism. Away then, with your "protections," falsely so called, and your "prohibitions;" we want no artificial hindrances.

A Warwickshire Farmer.

LORD WODEHOUSE ON LANDLORDS.—At the recent East Norfolk Agricultural Meeting, Lord Wodehouse made the following remarks:—

"He thought he could name another ingredient of infinitely more importance to this county, and that ingredient was a good landlord. *(Loud cheers.)* Some persons imagine that a good landlord is he who takes a low rent. I say, no. A good landlord is he who takes a fair remunerative rent, and considers himself as well as his tenant. A gentleman may have a good steward, but a good landlord does not rely on any steward; he looks round among his tenants for himself, and sees if they are farming well, and informs himself upon every thing that relates to his own property and the welfare of his tenants. A good landlord generally resides on his own property. He is not to be found three parts of the year in St. James's-street, but will be looking after his own interests as well as those of his tenantry. On the contrary, a bad landlord is the worst weed a soil produces. He lives principally in London—is seen at Newmarket, Melton Mowbray, and in their turn Paris, and Baden-Baden. The gentleman I mean employs an agent in Chancery-lane, Mr. Gammon. This Mr. Gammon never sees the estate himself, but employs clerks, who write an excellent hand and send in neatly written accounts. He knows nothing about the estate, whether it be arable or pasture, only the rent. He employs some person who deceives him, and informs him the land is worth 40s., while it is really worth only 30s. per acre. The agreements are made and the unfortunate tenants receive them. Rent-day arrives, and the tenant informs Mr. Gammon that he cannot make up his rent; to which Gammon replies I cannot give you a moment, his lordship has lost money at Crockford's, Newmarket meeting is coming, and he must have the money. Now what is a good landlord? He wishes to live himself, but he also desires that all around him should live. The rent-day comes, and the tenant says, I am in real distress, it is difficult for me to make up my rent. The landlord from living on his estate, knows what the farmer has done to the land; he sees that he has been marling and done much, but that his capital is not sufficient to carry it on. What does the landlord say? What money do you want? The tenant replies, I do not want a great deal, an hundred pounds will make it all right. The landlord lends him it, and tells him to go on marling and improving. You are doing both me and yourself advantage. This is what a good landlord is. I hope sincerely, said the noble lord, that the good landlords may increase and the bad decrease. I pray sincerely and fervently for the prosperity of every individual—yeomanry, tenantry, and labourer. The improvements are so striking, that if a person lives for a year, he hardly knows the same place again. May those improvements go on from day to day, and agriculture continue progressing in every part as it has done already. (*Cheers.*)

ON THE STATE THE SOIL SHOULD BE IN WHEN SEED IS DEPOSITED IN IT.

By Henry R. Madden, Esq., M.D., Penicuik.

(*From the Transactions of the Highland and Agricultural Society of Scotland.*)

It is a source of extreme gratification to all who are devoting themselves to agricultural science, that we have no longer to exert all our energies in an endeavour to draw *attention* to this most interesting study; but that, in dependence upon the favourable excitement produced within the last year or so, we can now proceed with confidence with the illustration of the many varied and interesting phenomena presented to the agricultural chemist, with the assurance that we shall no longer be accused of urging upon your attention subjects with which you have but little to do. No: I rejoice to say that very many of our most enlightened agriculturists have at length confessed the importance of science to the rightful prosecution of their art, and are now fully prepared to lend a ready ear to the dictates of the chemical philosopher. Still, however, the farmer's mind is more in a state of excitement than of patient and steady enquiry; and it is with great difficulty that he can be persuaded to wait until the newly applied science has had sufficient time to overtake the long-established practice. The farmer is too anxious that the chemist should at once shew him what can be done to *improve* the *present state* of agriculture, and cannot well understand why chemists are not *at least* as far advanced as he is on the road to improvement.

It is evident that very little reflection is necessary to point out the incorrectness of such a conclusion. It is calculated that two hundred millions of individuals spend their daily toil in the practice of agriculture, and that this state of things has continued for thousands of years; whereas, as regards the science of agriculture, it has never yet occupied *exclusively* the attention of even twenty individuals in the whole civilised world, and even these during scarcely more than the present century. How, then, is it possible that a science so recent, and so sparingly cultivated, should be capable at once to keep pace with a practice the most ancient, and the most extensively pursued, of all the varied arts with which man is acquainted?

Yet, notwithstanding all these disadvantages, there is scarcely, I believe, a single point in the complicated machinery of practical farming upon which Science cannot already throw some degree of light; and I feel confident that there are very many points, and these among the most important, upon which her knowledge is already so extensive and well-founded, that she is able and willing to proceed hand in hand with the farmer into the wide and enticing field of agricultural improvement.

It is my object in the present lecture to take up but one of the many branches of this complex science, and by it to illustrate two points.

1st, I shall endeavour to shew the kind of reasoning by which men of science arrive at their conclusions, and by so doing shall endeavour to increase your confidence in our statements; and, in the 2nd place, I shall point out to you how closely connected these conclusions are with the future prospects of your art, and as a consequence, how much more certain the progress of improvement must become, when its prosecutors are well tutored in the principles upon which its success depends.

I have noticed with regret that almost all the popular works hitherto written upon agricultural science, have fallen into the one common error of endeavouring to make a chemist of the practical farmer; the authors all seem to think it necessary that, in order to the improvement of agriculture, every farmer must study chemistry. In this respect, however, I hold a totally different opinion. It appears to me that it would be a precisely analogous case, if writers on climate had said that, in order to preserve health, it were absolutely necessary that every individual should study medicine. It is not an extended *knowledge* of chemistry that is required—it is only a *confidence* in the results obtained by chemists that is absolutely necessary. If the farmer becomes acquainted with the facts as they apply to his practice, and if he has such confidence in these facts that he is willing to act in accordance to them, there is not the least necessity that he should occupy his time and burden his mind with all the abstruse processes of reasoning and experimental proof by which the chemist has been enabled to trace out their connection with the complex phenomena which they serve to illustrate.

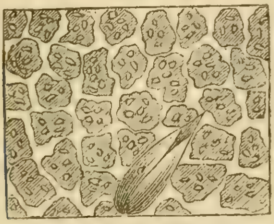
I admit that it is requisite, in the first instance, to enter just so far into chemical detail as to convince the farmer of its accuracy; but still I believe that this can in general be much better accomplished, by merely pointing out the connection which subsists between various phenomena, and their mutual dependence on one another, without attempting to follow out step by step the chemical reasonings which form the ground-work of these opinions.

I purpose at present to give a short narrative of the various conditions of soil at the time the seed is committed to the ground, and to point out the manner in which these severally affect the prospects of the future crop. And in so doing, I trust I shall be able to satisfy you that theory and practice are not such extremely different things as many of you appear to think; but that, in fact, the most perfect theory is in all cases the result of comparing carefully with each other the various facts brought to light by *practice*, and that, in fact, the science of all arts is discovered solely by *looking more closely* into the results of *practice*, and comparing them with each other, for the purpose of determining, as far as possible, their connection and mutual dependence. In the following observations I shall studiously avoid chemical *detail*, and when referring to any chemical changes which have occurred, I shall simply name the *fact*, trusting to your confidence in the science for its reception:

The first thing which occurs after the sowing of the seed is, of course, *germination*; and, before we examine how this process may be influenced by the condition of the soil, we must necessarily obtain some correct idea of the process itself. The most careful examination has proved, that the process of germination consists essentially of various chemical changes, which require for their development the presence of air, moisture, and a certain degree of warmth. Now, it is obviously unnecessary, for our present purpose, that we should have the least idea of the nature of these processes : all we require to do is to ascertain the conditions under which they take place ; having detected these, we know at once what is required to make a seed grow. These, we have seen, are air, moisture, and a certain degree of warmth ; and it consequently results, that whenever a seed is placed in these circumstances, germination will take place. Viewing matters in this light, it appears that soil does not act *chemically* in the process of germination—that its sole action is confined to its being the vehicle by means of which a supply of air, and moisture, and warmth, can be continually kept up. With this simple statement in view, we are quite prepared to consider the various conditions of soil, for the purpose of determining how far these will influence the future prospects of the crop ; and we shall accordingly at once proceed to examine carefully into the *mechanical relations of soil.* This we purpose doing by the aid of figures.

Soil, examined mechanically, is found to consist entirely of particles of all shapes and sizes, from stones and pebbles down to the finest possible powder ; and, on account of their extreme irregularity of shape, they cannot lie so close to one another as to prevent their being passages between them, owing to which circumstance, soil in the mass is always more or less *porous.* If, however, we proceed to examine one of the smallest particles of which soil is made up, we shall find that even this is not always solid, but is much more frequently porous, like soil in the mass. A considerable proportion of this finely-divided part of soil, *the impalpable matter*, as it is generally called, is found, by the aid of the microscrope, to consist of *broken down vegetable tissue ;* so that, when a small portion of the finest dust from a garden or field is placed under a microscope, we have exhibited to us particles of every variety of shape and structure, of which a certain part is evidently of vegetable origin. In these figures I have given a very rude representation of these particles ; and I must beg you particularly to remember that they are not meant to represent, by any means accurately, what the microscope exhibits, but are only designed to serve as a plan by which to illustrate the mechanical properties of the soil. On referring to Fig. 1, we perceive that there are two distinct classes of pores ; 1st, the large ones, which exist between the particles of soil ; and 2nd, the very minute ones, which occur in the particles themselves ; and you will at the same time notice, that whereas all the larger pores —those between the particles of soil—communicate most freely with each other, so that they form canals ; the small pores, however freely they may communicate with one another in the interior of the particle in which they occur, have no direct connection with the pores of the surrounding particles. Let us now, therefore, trace the effect of this arrangement. In Fig. 1 we perceive that these canals and pores are all empty, the soil being *perfectly dry*, and the canals communicating freely at the surface with the surrounding atmosphere ; the whole will of course be filled with air. If, in this condition, a seed be placed in the soil, as at *a*, you at once perceive that it is freely supplied with air, *but there is no moisture ;* therefore, when soil is *perfectly dry*, a seed cannot grow.

Fig. 1.



Let us turn our attention now to Fig. 2. Here we perceive that both the pores and canals are no longer represented white, but black, this colour being used to indicate water ; in this instance, therefore, water has taken the place of air, or in other words the soil is *very wet.* If we observe our seed *a* now, we find it abundantly supplied with water, but *no air.* Here again, therefore, germination cannot take place. It may be well to state here, that this can never occur *exactly* in nature, because water, having the power of dissolving air to a certain extent, the seed *a* in Fig. 2 is in fact supplied with a *certain* amount of this necessary substance ; and owing to this, germination does take place, although by no means under such advantageous circumstances as it would were the soil in a better condition.

Fig. 2.

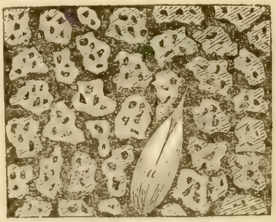
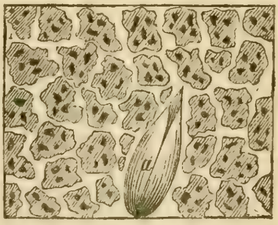


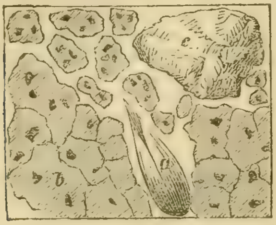
Fig. 3.



We pass on now to Fig. 3. Here we find a different state of matters. The canals are open and freely supplied with air, while the pores are filled with water ; and consequently you perceive that, while the seed *a* has quite enough air from the canals, it can never be without moisture, as every particle of soil which touches it is well supplied with this necessary ingredient. This, then, is the proper condition of soil for germination, and, in fact, for every period of the plant's development ; and this condition occurs when soil is *moist*, but not *wet ;* that is to say, when it has the colour and appearance of being well watered, but when it is still capable of being crumbled to pieces by the hands, without any of its particles adhering together in the familiar form of mud.

Turning our eyes to Fig. 4, we observe still another condition of soil; in this instance, as far as *water* is concerned, the soil is in its healthy condition—it is moist, but not wet—the pores alone being filled with water. But where are the canals? We see them in a few places, but in by far the greater part of the soil none are to be perceived: this is owing to the particles of soil having adhered together, and thus so far obliterated the interstitial canals that they appear only like pores. This is the state of matters in every *clod of earth b.*; and you will at once perceive, on comparing it with *c*, which represents a stone, that these two differ only in possessing a few pores; which latter, while they may form a reservoir for moisture, can never act as vehicles for the *food* of plants, as the roots are not capable of extending their fibres into the interior of a clod, but are at all times confined to the interstitial canals.

Fig. 4.



With these four conditions before us, let us endeavour to apply them practically, to ascertain when they occur in our fields, and how those which are injurious may be obviated.

The first of them, we perceive, is a state of too great dryness, a *very rare* condition, in this climate at least; in fact, the only case in which it is likely to occur is in very coarse sands, where the soil, being chiefly made up of pure sand and particles of flinty matter, contains comparatively much fewer pores; and, from the larger size of the individual particles, assisted by their irregularity, the canals are wider, the circulation of air freer, and consequently the whole is much more easily dried. When this state of matters exists, the best treatment is to leave all the stones which occur on the surface of the field, as they act as shades, and thereby prevent or retard the evaporation of the water. We will not, however, make any further observations on this very rare case, but will rather proceed to fig. 2, a much more frequent, and, in every respect, more important condition of soil; I refer to an *excess of water*.

When water is added to perfectly dry soil, it of course, in the first instance, fills the interstitial canals, and from these enter the pores of each particle; and, if the supply of water be not too great, the canals speedily become empty, so that the whole of the fluid is taken up by the pores; this, we have already seen, is the *healthy* condition of soil. If, however, the supply of water be too great, as is the case when a spring gains admission into the soil, or when the sinking of the fluid through the canals to a sufficient depth below the surface is prevented, it is clear that these also must get filled with water so soon as the pores have become saturated. This, then, is the condition of *undrained soil*. Not only are the pores filled, but the interstitial canals are likewise full, and the consequence is, that the whole process of the germination and growth of vegetables are materially interfered with. We shall here, therefore, briefly state the injurious effects of an excess of water, for the purpose of impressing more strongly on your minds the necessity of thorough-draining, as the first and most essential step towards the improvement of your soil.

The *first* great effect of an excess of water is, that it produces a corresponding diminution of the amount of air beneath the surface, which air is of the greatest possible consequence in the nutrition of plants; in fact, if entirely excluded, germination could not take place, and the seed sown would, of course, either decay or lie dormant.

Secondly, an excess of water is most hurtful by reducing considerably the temperature of the soil; this I find by careful experiment to be to the extent of 6½° F. in summer, which amount is equivalent to an elevation above the level of the sea of 1950 feet. So that, supposing two fields lying side by side, the one drained, the other undrained, and supposing them both equally well cultivated, there will be nearly as much difference in the amount and value of their respective crops, as if the drained one was situated at the level of the sea, and the other had an elevation as high as the most lofty of the Pentland Hills.* But besides this, and what is nearly equally bad, the temperature is rendered unnaturally high during winter; whereas it has been proved, that one great source of health and vigour in vegetation is the great difference which exists between the temperature of summer and winter; which difference amounts in dry soil to between thirty and forty degrees, while in soil very much injured by an excess of water, the whole range of the thermometer throughout the year will probably not exceed from six to ten degrees.

These are the two chief injuries of an excess of water in soil which affect the soil itself. There are very many others affecting the climate, &c., but these not so connected with the subject in hand as to call for an explanation here.

Of course all these injurious effects are at once overcome by thorough-draining, the result of which is to establish a direct communication between the interstitial canals and the drains, by which means it follows, that no water can remain any length of time in these canals without, by its gravitation, finding its way into the drains.

The fourth figure indicates badly cultivated soil, or soil in which large unbroken clods exist; which clods, as we have already seen, are very little better than stones, on account of their impermeability to air and the roots of plants. Too much cannot be said in favour of pulverising the soil; even thorough-draining itself will not supersede the necessity of performing this most necessary operation. The whole valuable effects of ploughing, harrowing, grubbing, &c., may be reduced to this; and almost the whole superiority of *garden* over *field* produce is referable to the greater perfection to which this pulverising of the soil can be carried.

The immortal Jethro Tull has the honour of having first directed the farmer's attention forcibly to this subject; and so deeply impressed was he with its infinite importance, that he believed the use of manure could be entirely superseded, were this pulverising carried to a sufficient extent.

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* Of course the field of high elevation must be thoroughly drained to equal even the *undrained* field at the level of the sea.

The whole success of the drill husbandry is owing, in a great measure, to its enabling you to stir up the soil well during the progress of your crop; which stirring up is of no value beyond its effect in more minutely pulverising the soil, and increasing, as far as possible, the size and number of the interstitial canals.

Lest any one should suppose that the contents of these interstitial canals must be so minute that their whole amount can be of but little consequence, I may here notice the fact, that in moderately well pulverised soil they amount to no less than one-fourth of the whole bulk of the soil itself; for example—100 cubic inches of moist soil (that is, of soil in which the pores are filled with water, while the canals are filled with air) contain no less than 25 cubic inches of air. According to this calculation, in a field pulverised to the depth of 8 inches, a depth perfectly attainable on most soils by careful tillage, every imperial acre will retain beneath its surface no less than 12,545,280 cubic inches of air.

Taking into the calculation the weight of soil, we shall find that, with every additional inch which you reduce to powder (by ploughing, for example, 9 inches in place of 8), you call into activity 235½ tons of soil, and render it capable of retaining beneath its surface 1,568,160 additional cubic inches of air. And to take one more element into the calculation, supposing the soil were not properly drained, the sufficient pulverising of an additional inch in depth would increase the escape of water from the surface by upwards of 100 gallons a day, a quantity which would very soon tell upon the dryness of soil, if there were a continuance of dry weather for several successive days, more especially if this were accompanied by sunshine.

From what I have now stated, I humbly hope that you cannot fail to perceive the close connection which subsists between the mechanical condition of the soil and the result of germination; and that you have at the same time felt satisfied of the degree of certainty and point which all the processes of preparing the soil assume, when the principles on which they depend are fully understood and appreciated.

Hitherto we have spoken only of the condition of the *soil* at seed-time; we shall now examine into the various methods in use for sowing the seed, and determine what effect these can have upon the value of the resulting crop.

It is well known to you all, that, until lately, the grain crops were almost universally sown broadcast upon the furrow slice, which process has the effect of imitating, to a certain extent, the drill-system. A very few considerations, however, will suffice to point out, that with this system of sowing your success is so far dependent upon the skill of your workmen, that you may be considered completely at their mercy.

To demonstrate this, let us refer to the figures below, which are designed to shew the effects produced by bad ploughing and bad sowing, as compared with the results obtained by the use of machines.

In Fig. 5, you have an example of bad ploughing. You will at once perceive, that, in this case, the ploughman has either had a very unsteady pair of horses, or has been but little experienced in his employment.

At *a*, for example, he has given his plough too much land, and has turned over a slice considerably broader than it should be, thus producing, as is shewn in Fig. 6, a space in which *too much* seed will lodge. At *b* he has laid the slice too upright, thus producing what is technically termed a *proud furrow*, and which in another manner affects the sowing by allowing the seed to slip down between the two slices, and consequently become buried to far too great a depth below the surface.

Fig. 5.

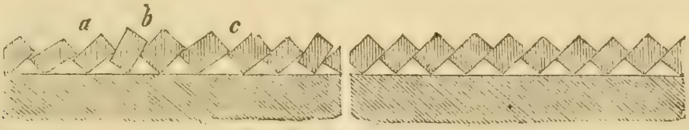


Fig. 6.

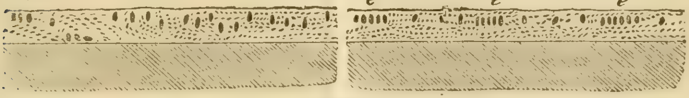
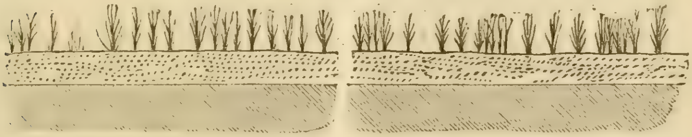


Fig. 7.



Again at *c*, by leaning the plough to the side, he has turned over a slice considerably thicker at the top than the bottom, which, in its turn, will influence the crop by stirring too little soil at certain places, and thus producing an *active* soil of different thicknesses. Besides these, there are various other faults in ploughing which must be familiar to all of you, and which, in the hands of many ploughmen, will be of no rare occurrence; although, as we shall perceive immediately, each one of these errors have a distinct and visible influence on the growing of the crop.

On a field thus carelessly turned over, the sower proceeds to scatter the seed; and here, again, you will at once perceive the effect which the performance of this operation will have on the resulting crop. To the left of Fig. 6, I have supposed a good sower to be employed, but still he is labouring under the disadvantage of following a bad ploughman. The figure represents in section the position of the seeds as determined by the condition of the furrow-slice, and you will at once notice several important errors. At *a* there is too much seed, at *b* it is far too deep below the surface, at *c* it is much nearer the surface, and so forth. On the right, again, of Fig. 6, I have endeavoured to represent the injury affected by a bad distribution of the seed, even although the ploughing has been performed in the most masterly style, as in the furrow slices immediately above in Fig. 5. In this case at *e* the seed is far too thick, owing to his not having opened his hand soon enough when delivering it out, and on this account the crown of the ridge is much too thinly supplied. This is a very serious, but I fear too common a fault; at least, if we carefully observe the brairding of the fields in spring, there is nothing more common than to see the furrows green, whilst the crowns of the ridges are still nearly bare.

Let us now turn our attention to the results likely to be produced by these various errors. We have already seen that the requisites for germination are air, moisture, and a certain degree of warmth; and I may here observe, that the temperature has a very decided influence upon the time required for germination, and that, within certain limits, the higher the temperature is the more rapidly does the process go on.

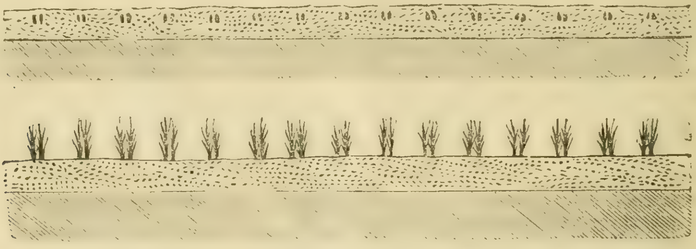
But it must be kept in mind, that the soil receives its heat through the medium of the air, and that, consequently, the surface is always more quickly heated than that deeper down; in fact, the heat progresses so slowly from above downwards, that it has been found that at a certain depth beneath the surface, the temperature of summer is not felt until the following winter.

Whenever the air is warmer than the soil, the surface of the soil will be warmer than that below the surface; when, on the other hand, the air is cooler, the surface of the soil will, by contact, cool much more rapidly than that below the surface.

From this state of matters it follows, that the most rapid germination will occur at about 1 inch or so below the surface, to which depth the heat will soon penetrate, and which, nevertheless, will not be so readily cooled during the night. On this account, the seeds at this level will generally grow most rapidly, and the germination of others will occupy more and more time, as the distance between them and the surface is increased. It is owing to this fact that seeds too deep sown do not grow at all, the temperature not being sufficiently elevated, and the supply of air too limited to set the chemical processes at work which are essential to germination. In Fig. 7, we perceive this result very clearly demonstrated; for, while the plants at one spot, where the seeds were about 1 inch below the surface, have attained a good size, those which slipped down between the furrow slices from the bad ploughing, have scarcely yet appeared above ground, as below *a* and *b* of Fig 6.

Turning your attention to Fig. 8, you will at once perceive the immense advantage of the machine over the handsown crop. In this case, you can work up your land to any degree of fineness you please, by harrowing, grubbing, rolling, &c. You are preserved from every injury arising from a careless distribution of the seed; and even the errors of your ploughmen have not so serious an effect upon the result of the crop. The machine delivers the seed, as in the upper figure, with the greatest exactness, at any depth you please, and the result is, as shewn in the lower figure, the greatest equality in the *braird*.

Fig. 8.



We will now trace, *very shortly*, the progress of our crop towards maturity, and in doing so, we shall perceive that nearly all the ordinary faults in the crop are referable primarily to errors in the cultivation of the soil; errors not so much to be corrected by *science* as by *improved practice*.

The experience of our most enlightened agriculturists have proved satisfactorily, that the ultimate success of every crop depends, in a very great measure, upon the condition of the plants during the *first period of their growth*; that is, from the germination of the seed until the plant has attained some degree of strength, say for the first three or four weeks. If from any faulty condition of the soil, or the continuance of unfavourable weather, the plants remain in an unsatisfactory sickly condition during this period, they seldom, if ever, recover their vigour afterwards, and even the most favourable season, during the latter period of their growth, will not compensate for the injury done during the early part of the season. With this fact in view, how careful should the farmer be, that every circumstance as to his soil be so well attended to, that *at least* he should be independent of all defects unconnected with the weather. He should, therefore, by thorough draining, good ploughing, and careful sowing, endeavour to place *every seed sown* under the most favourable circumstances, so that they may all germinate together, and be equally benefited by all the various conditions requisite for the production of a good harvest.

Should these things not be properly attended to, various circumstances may occur that are very injurious to the prospects of the crop, one of the most serious of which is the following:—

It should always be borne in mind, that the life of a plant is divided into several distinct stages, each of which has its *defined length*; nay, so fixed are these periods, that it is not difficult to decide the exact number of days required for each in a *healthy plant;* and there can be no doubt, that any circumstance tending to lengthen or diminish any of these periods, has a proportionally injurious effect upon the produce. These periods are four in number, viz., germination, growth, flowering, and the ripening of the seed.

Now, it is well known that if anything causes the plant to flower *too early* (thus shortening the period of growth), the seed never fills so well, neither is the produce by any means so large, as when the plant has grown to its proper size, before the period of flowering sets in; and again, it is equally important that the process of ripening *after the seed has filled,* should be as rapid as possible. As the period of ripening is upon the whole by far the most important to the farmer, we will in conclusion devote a few words to its consideration.

The ripening of the seed, like all other processes in the vegetable economy, consists entirely of various chemical processes, whose nature I shall not at present attempt to explain, but whose results must be carefully considered in order to arrive at a true conclusion, as to the modifying influence of different modes of culture. When the ear first fills, it appears composed almost entirely of a substance resembling *milk*; in about a fortnight after this, if we again examine the crop, we shall find the seed much more *solid,* the milky juice having hardened and consolidated, and the straw having begun to wither, which it always does from the ground to the ear. At this period the straw will be yellow for about a foot off the ground;—in another fortnight the crop will be *perfectly ripe,* that is to say, the straw will be uniformly yellow *up to the ear,* and the chaff will be sufficiently loose to admit of the grain being *rubbed out* by the hands. On examining the ear, the most perceptible difference which has taken place since the last period is, that the skin has become much thicker and harder, while the flour has diminished in quantity. Now, this is the important point, viz., that the last change in the seed is an increase of bran, and a relative diminution of flour, which change increases materially, according to the length of time that elapses between the ripening and the harvesting of the crop.

Bearing this point in view, let us see the effect which bad ploughing will have upon the result at harvest. Those seeds which have been buried too deep will be the last to flower, and consequently the last to ripen; so that if the farmer waits till the *whole* crop appears ready for the sickle, all the early seeds will be *too ripe* by the time that the late ones are sufficiently dry to cut, so that by this error in ploughing, there is a direct loss by the production of less flour from the early seeds, while the farmer is waiting for the late ones to ripen; thus showing that an error committed before seed-time has had its influence during the whole period of the growth of the crop, and has shewn itself at last in a considerable loss to the farmer, by his not being able to harvest his grain at the most profitable time.

In the foregoing observations it has been my constant endeavour to keep out what is merely theoretical, and to dwell more largely upon what has a direct influence on practice, and I have also endeavoured to point out that those who devote themselves to the *true* science of agriculture, by no means confine themselves to chemical detail; but that when they wish really to benefit the farmer, they go out into the fields, watch the performance of every operation, and detect, by personal observation, what is really necessary and what is advantageous; and by so doing, they obtain a fund of knowledge, which, when applied with the aid of the collateral sciences of chemistry and vegetable physiology, to the explanation of the phenomena under observation, cannot fail to lead to the most important and *truly practical* conclusions. If a person satisfies himself with *book knowledge* for his practice, and contents himself with sitting in his closet, and drawing up codes of agriculture according to his preconceived opinion of what is right, he will never be capable of rendering any real service to the practical farmer. He may, indeed, by his scientific investigations throw such light upon some abstruse question as to be of essential service in guiding others who understand both theory and practice, into the right path of inquiry; but still I feel confident that the farmer cannot be too cautious in receiving the advice of the *purely scientific,* of those who consider it essential to make *chemists* of every farmer who comes to them for advice; by those he may frequently be misled, but seldom will he be essentially benefited. The man of science who would devote himself to the improvement of agriculture, must himself become acquainted with all the minutiæ of practice. He must approach the farmer on his own footing, and converse with him in his own language; and by so doing we feel satisfied that he will ultimately gain his confidence and support, and will in fact proceed with much more rapid strides in the field of improvement. And we may ask, in conclusion, what object can be more noble, and what occupation more gratifying, than the constant and unwearied endeavour to improve an art at once the most important and the most extensively cultivated?

PLAIN AND PRACTICAL SUGGESTIONS TO THE SMALL FARMER,

FOR IMPROVING AND INCREASING HIS MANURE, ON CHEMICAL PRINCIPLES, AND AT LITTLE EXPENCE.

TO THE EDITOR OF THE WEST BRITON.

SIR,—The harvest being now got in, the time is coming to prepare for the dung-heap. The *stocky* farmer can buy books, and find time to read them. He can dig tanks, and use every means of turning all his materials to the best advantage. For him these suggestions are not intended; but for the numerous class of cultivators who have barely capital enough to work their land, and know the difficulty of raising money to pay wages, rent, and taxes.

Let these, however, not be discouraged. The late Mr. Coke, of Norfolk (afterwards Lord Leicester,) came into possession of land which would not grow wheat, and let for about 3s. an acre; but lived to see those same lands, by good management, average four to five quarters of wheat per acre, and other crops in proportion, as shown in your last.

As the farmer depends on his manures for heavy crops of all kinds, he may lay it down as a maxim that

LOSS OF MANURE IS LOSS OF CROP,

and will, therefore, be glad to learn, that at very small cost, his dung-heap may be doubled or trebled in quantity and quality.

It stands to reason, that the excrement of every animal should be the best manure for that same animal's food; because it returns to the soil just what was drawn from it. Therefore human manure is the best for corn, and the articles eaten by man; and cattle dung, &c., for grass and cattle food. But it is not so well-known, that the dung is the undigested part of the food; the digested part going to the blood, and coming off in the urine. Hence the urine is the nourishing part, the *essence* of manure; yet the farmer attends chiefly to the cattle-dung and straw, neglecting the urine, and still more the privy soil, though these are the best manures he has.

If a cow yield about nine gallons of urine per week, containing eight or nine pounds of solid manure, of the best quality, worth 2d. a pound, and a horse not so much; we may estimate their urine, one with another, at a full shilling a week each, if all could be collected; that is, 52s. a head for the year's urine. But it cannot be all collected, as some is dropped in the field, where it does harm in dry weather, burning up the grass by its great strength. The above, however, is the lowest estimate of its value; other experiments give 14 to 20 gallons per week, yielding near 20lb. of solid manure, or 3s. 4d. a week, equal to 8*l.* 13s. per head per annum; the truth, probably, lies between the two. Again, a pint of urine should raise a pound of corn, or 10lbs. to the gallon. Hence 48 gallons should produce a quarter of wheat.

Manure may be considered to consist of three different principles:—

1. Humus, or vegetable mould, to feed the plant, and enrich the *soil*.
2. Ammonaical vapour to force the *crop*.
3. Salts, &c., to mature the plant and seeds.

Distinctions which, though not unobjectionable, will give some more intelligible notion of the properties and effects of the different materials than are often acted on.

To Improve the Quality,

save every drop of urine; it is the very *essence* of manure—too strong to use alone, as is seen by the spots where it drops in dry weather, but it works excellently with vegetable matter of all sorts, and prepares them to enrich the soil, whilst they bring it down to a proper strength. Urine contains salts and ammonia, and is very effectual in exciting vegetation. It should be fermented, either with vegetable matter or water, before using it for manure.

Straw contains salts and vegetable matter; and straw, worked with urine, both force the crop and feed it, or enrich the soil.

Some farmers have much of their straw eaten, to convert it into dung; and if they take care of the urine, this improves it for manure. But if they run the urine to waste, it carries off much of the salts; and the straw becomes weaker for manure after eating than before.

Save not only all the urine, but also the privy soil. This is worth five times its weight of cattle dung. You will see how to save it in my next. It is convenient to carry to heaps of weeds, straw, &c., in distant fields, as one load of human privy soil and urine will work five or six loads of weeds, &c., and make excellent manure. Straw, stalks, and vegetable matters contain the salts and humus; but not the ammoniacal vapour, which comes chiefly from animal matter, especially urine.

Cabbage stumps and other hard stalks, difficult to ferment, may be first worked with lime, or lime and salt, and thrown on the heap when rotten; as lime and weeds, &c., *kill each other*. But quick lime must never be mixed with dung, as it drives off the ammoniacal vapour; and so do wood ashes when *fresh*.

And here the farmer should bear in mind that vegetable matters ferment sour, and are of little use alone; whilst animal matters, especially urine, produce ammonia in fermentation, which is fixed by the vegetable acid, correcting it in return and rendering it fertilizing. Lime will also correct the acid and make it fertilizing; but ammonia is still necessary to excite vegetation.

To Increase the Quantity,

the land is enriched by humus, or vegetable mould; it is this which makes garden soil so much superior to that of fields.

Therefore, do not burn weeds and other vegetable matters, more than is needful, but make them pay their footing. Cut your weeds and hedge-sides *before* seeding, as much as possible; but if you have amongst them seeds or roots which will grow, kill them with lime and salt. Four gallons of salt (30 to 40lb.) and eight gallons of lime, will generally serve for two loads of weeds. When both lime and weeds are quite killed, a little privy soil or urine may be mixed in, if too far to draw to the dung-pit. Bog turf, such as is used for fuel, is a natural store of humus; sour and useless, or even injurious alone, but cured and rendered useful by lime or dung, and especially urine. Two or three loads of this turf partly dried, to one of dung, in alternate layers, or four or five of turf to one of dung, where the urine and night soil are well saved, makes good spit manure. With urine, 100 loads of turf to 150 gallons cow or other urine, works rapidly, so as to hiss; and is ready to spread in ten days, if hot weather.

Way soil, or any kind of earth (as different as possible from that of the field,) should be laid under and upon the heap, where carried out, to absorb drainage and vapour.

Where bog turf is not at hand, tanners' refuse bark may be used. It will not work so quickly, because it is rougher; but it is always short, and needs not to be worked to muck. In fact, all sorts of vegetable matters, ferns, rushes, dead leaves, and stalks, sods, &c., rotted with lime and salt, as above stated, or with dung and urine only, if free from seeds or live roots, will help the dung pit.

By these means the manure may be greatly increased in humus from the peat, weeds, or other vegetable matters, and in salts and ammoniacal vapour from the urine and privy soil. Burning is seldom necessary, except on stiff clays, and in breaking up heaths and sour or peaty lands. It may force the first crop, but consumes the humus and exhausts the soil. Every weed should pay its footing, by rooting and conversion into corn or other produce.

The ashes of hedge and ditch sods are useful for drying night soil, to drill in with turnip seed; but for this purpose they should be only charred black, not burnt red, except on heavy soils.

Directions for the Place and Management of the Dung-heap.

Farmers have generally found out the advantage of having a dung-pit instead of a dung-heap; but still the rich drainage of the dung is much of it allowed to run away; the urine from the stables, &c., does not half of it run into the dung, though it is the best part, the essence of the whole; and the privy manure, which is better still, is mostly neglected altogether.

All drainage from the stables, cow-houses, and styes, should run into the pit, and the overflowings should be caught in another pit, to throw back in dry weather.

The following is a cheap and effectual method of doing all this:—

When convenient, the pit should be on the north side of a wall, or of some trees, to shade off the sun; or, under shed, to keep off both sun and rain; but these advantages cannot always be had, without too much cost.

Having selected the best place for your pit; first lay in way-soil, peat, or any soil as different as possible from that of your farm, and give it a hollow surface, like a great tea-saucer. Upon this lay potato stalks, and any other vegetable matters, easy to ferment, and hereupon a layer of dung. Next a layer of vegetable matter, as peat, turf, bark, rotten weeds, fern, leaves, or any kind of dead vegetables, to increase your quantity; and so every week, cover your dung from the stables, styes, &c., with three or four times as much dead vegetable matter; thus making up your heap in alternate layers. The urine should all run into the pit from stables, and all by narrow drains, where it will not be much exposed to evaporation; and another such drain should lead from it to a lower pit, to catch the overflowings when there are any, and keep them to throw back upon the dung in dry times. This lower pit should be deeper and smaller than the other, and must never be allowed to overflow, as that would be waste. It may contain cabbage stumps, and other things difficult to work, which may be thrown back upon the heap as they rot.

The lower pit may be used as a store of liquid manure, for watering young corn, in May or June; which gives it a start, and much strengthens its growth. Where needful the bottom of the pit may be staunched with clay; and stones or gravel stamped in to harden it: none of the drainage should be lost.

The privy should discharge into the large pit, if possible, or else into the small one; and coal ashes, (but not wood ashes) are good to throw where this comes out. Saw-dust or turf-dust from the stacks do very well. House washings, as soap-suds, &c., should also be thrown on the heap: but the wash of the country, and heavy floods of rain should not be allowed to enter it, but be lead into the meadows by other channels.

In wet seasons, the top should be slanted to turn off the rain.

Each layer of dung being covered with a layer of peat or other dead vegetable matter, the whole heap, when finished, should be crusted over with way soil, or other earth, to *retain the vapours*.

The fermentation will be slower or quicker, as it is more or less covered and compressed.

Wherever your heaps are made, whether in the yard or the field, give them a bed of some sort to absorb the drainage, and crust them over with soil, and mix all up with the dung before spreading. The drainage carries down the strength of the heap; sometimes enough to kill the seed in the place where the heap stood; whilst it would have been of the greatest benefit if spread out with the dung.

PORTABLE MANURES,

Containing great strength in small compass.

These are very valuable to the farmer at a distance from towns, one load being, in many cases, sufficient for several acres. *They generally force or forward the crop, without doing much to enrich the soil with humus.*

Salt, 1 ton (value 25s.) is enough for 10 to 20 acres top dressing; though much more is used when ploughed in to kill weeds, &c. For this purpose a ton may go to 2 or 4 acres.

Soot is an excellent top dressing, 20 bushels per acre; perhaps still better with 2 or 3 cwt. salt, just damped to prevent flying about when spreading. It should be sown upon wheat in calm evenings, when rain is expected.

Gypsum, on clover, when wet with dew or rain, and the weather clearing, that it may stick on the leaf; 5 or 6 cwt. per acre.

Bone-dust, excellent to drill in with turnip seed, 10 to 30 bushels per acre; and better mixed with half or quarter as much wood ashes. A top dressing of the turnips, after hoeing, of gypsum, 3 cwt., and salt 1 cwt., per acre, would probably help the bone dust.

Nitrate of soda, and some other more expensive manures, seem to pay very well when judiciously used; but the object of this paper being to help the small farmer forward, with but little outlay, they need not be dwelt on here.

It will be well, however, for the farmer to know that lime, in compost with three or four times as much ditch or pond mud, laid out not very thick, and occasionally turned, gradually produces nitrate, more or less, according to the quality of the mud.

I am, Sir, yours, &c., &c.,
J. PRIDEAUX.

18th September, 1842.

LECTURES ON THE APPLICATION OF SCIENCE TO AGRICULTURE.

Mr. W. M. CHATTERLEY delivered his ninth lecture at Havering Bower, near Romford, on Monday, the 19th September, on saline manures in continuation.

The subject first spoken of was the manures containing potash as a base, those of soda having been treated in the last lecture. POTASH was shown to be present in every crop, nay, in almost every plant, more particularly in white crops, which contained silica (sand or flint) in considerable quantity; and most of all was it essential for wheat, as that plant contained of all crops the largest per centage of silica, and by potash alone could silica be taken into solution, so as to be absorbed and circulated with the sap of the plant, and subsequently deposited with its tissue. Moreover, it had been of late years discovered that those soils which yielded the most abundant wheat crops always contained the larger quantity of potash, and that clay soils contained it naturally in considerable quantity, that is, considerable in proportion to the quantity required —for it was well worthy of remark that the quantity of potash contained in the wheat plant was by no means sufficient for the solution of the quantity of silica existing in it, and this led to the belief that the potash which conveyed the silica in solution to the plant was returned to the soil after having deposited its burden, and there again acted the part of a solvent for a fresh portion of silica, again to be conveyed to the crop. Wheat, unless supplied with a sufficiency of soluble silica, could not grow strongly or healthily; hence the necessity for the presence of potash, in order to its abundant supply—but not potash alone, but potash (an alkali itself) in union with an acid to neutralize its caustic properties and form a salt. Thus, CARBONATE OF POTASH (the *pearlash* of commerce) and NITRATE OF POTASH (*nitre*, saltpetre) were useful as manures in salts deficient of potash. The source whence these might be obtained most cheaply by the agriculturists requiring potash, and the value of each as a manure, was the next point for consideration. With respect either to pearlash or nitre the price would probably exclude them from general or extensive use; but if we look to the sources whence they may be obtained, we shall find them, for the most part, within the reach of all. The pearlashes of commerce are obtained from woodashes in such countries as Canada or Russia, where forest land abounds. The ashes of various kinds of trees, shrubs, and herbs, contain varying quantities of this salt, from one-tenth, as in the beech, oak, and elm, to about seven and a half per cent., as in the wormwood. Herbs contain more than shrubs, shrubs more than trees, while the leaves and branches of trees contain more than the woody portions. Wood-ashes contain, besides this pearlash, varying quantities of silica, phosphate and carbonate of lime, and magnesia, all highly useful for plants, containing matters which are the direct food of plants; as might readily be supposed, inasmuch as they are themselves the ashes of plants. Can potash be always obtained in sufficient quantity from this source? There are the hedge-rows, bottoms. and wood-land, unfortunately too frequent upon the generality of farms, which it is desirable to remove as much as possible; by burning these, and mixing with dung, or by spreading upon the land with such mixing, much benefit might be derived. But another question arises—is it economical to consume so much vegetable matter, which might be used as a manure, if the seeds were prevented from germinating and the substance broken up, as might be effected by means of lime or the drainings of the farm-yard? The one method or the other, or in part both, are at the option of the agriculturist, as he may require either, or may find each cheaper or more convenient. Carbonate of potash is deliquescent (attracts moisture); the same remark will therefore apply to this salt, as was made with regard to those deliquescent salts mentioned in the last lecture.

With regard to NITRE, a considerable supply could be procured by the mixture of lime and vegetable matter left in contact for some length of time, which produced a decomposition of the vegetable matter, the carbon of which, being converted into carbonic acid, united itself to the lime and formed chalk, while any portion of nitrogen which it contained, together with a supply obtained from the atmosphere, was, by the influence of the lime, induced to unite with oxygen from the air, forming nitric acid; the nitric acid then combined with the lime to form nitrate of lime, and with any portion of potash that might be present, to form nitrate of potash. By this means it may be observed, that nitrogen and potash are both supplied at the same time, and to the nitrogen must be attributed a large share of the fertilizing effects of the salt; and this leads us to the consideration of the other saline manures which contain nitrogen.

NITRATE OF SODA is nothing more than another native nitre with soda, as a base, instead of potash, in union with nitric acid: it is, perhaps, yet to be decided, which of these two possesses the most fertilizing properties, though the preponderance (especially for crops that contain potash) is, perhaps, in favour of nitrate of potash: the difference of price will decide which will be used by the farmer, but it seems more than probable that other and cheaper sources of nitrogen will be chosen, when it is desirable to supply this substance in a saline form.

Farm-yard manure, and animal matter in general, as night-soil, urine, blood, and guano, have already been spoken of as containing salts of ammonia, and ammonia has been shown to consist of hydrogen and nitrogen. The superiority of ammonia over nitric acid for the supply of nitrogen to plants is undoubted, and seems to be due to the greater facility with which it undergoes decomposition, forming the various nitrogenous products of vegetables, as gluten, albumen, &c.; while the facility with which hydrogen (the other constituent) unites with the universally present oxygen to form water, is an additional cause of its fertilizing effects.

SULPHATE OF AMMONIA seemed the salt best adapted for the use of the farmer to supply his crops with nitrogen. This salt was now prepared by Mr. Croll's patent process for purifying coal gas, and might be procured for about 16s. the cwt., and would most probably become much cheaper, as an inexhaustible supply might be procured, by fitting up Mr. Croll's apparatus at the various gas works throughout the kingdom, a result which would no doubt ensue upon the demand for this article becoming general among agriculturists, who could not better consult their own interest than by using this salt, not in large quantities, for in most seasons from half to three quarters of a cwt. per acre as a top-dressing, applied at two or three separate periods, would be found preferable; and with this, as with all saline manures, small dressings judiciously applied according to the condition of the crops, were more successful than large dressings of two or three cwt. or more per acre at a time, as recommended for some saline manures, or of 40 to 50 as recommended for others. These small dressings could be proportioned to the wants of the crop, neither "burning them up," nor making them "too growthy," as has been complained of in some instances. Soot owes its efficacy as a fertilizer to the *Sulphate of Ammonia* it contains. With regard to the efficacy of sulphate of ammonia, Mr. Chatterley shewed a tabular view of the result of experiments conducted upon a bad plant of wheat on Mr. Hall's farm, with different quantities of this salt; in proof of the latter statement, the increase had been altogether beyond expectation: it should not be drilled with the seed.

With regard to saline manures in general, they, like all others, should not be applied unless the land is deficient in the substances which they by their constituents are fitted to supply, nor to land which is not properly drained; and with regard especially to manures containing nitrogen, it should be remembered that, in order that they may stimulate the plant to growth, the vegetable matter must be present in the soil in sufficient quantity to supply the material; for though much may be obtained from the atmosphere, such as nitrogen and carbonic acid, still the soil should be in good condition to supply more carbonic, phosphoric, and hydrochloric acids, lime, potash, soda, and magnesia, silica, &c., as they cannot be obtained elsewhere, and are absolutely necessary to the healthy existence of the plant.

It is for want of due attention to all these circumstances that so many contradictory accounts of the value of saline manures are propagated, that so much of unmerited praise and blame have been bestowed upon them.

Tenth Lecture, delivered on Monday, September 26th, on the Earthy Manures.

Lime itself and the manures having lime for a base, were first spoken of.

Chalk, the various *limestones* and *marble*, were explained to have lime present in them in union with carbonic acid, and in some cases with sulphuric acid, forming *carbonates* and *sulphates of lime.* In the geological formations of this country, lime (in combination with various other substances) was described as appearing in nearly all, with the exception of the carboniferous or coal measures, and the lower granite. Chalk and limestone appeared in the various formations united with the other general constituents of the peculiar strata. The upper chalk, it was well known, was mixed with what were commonly termed chalk flints; but, besides this, in the substance of the chalk itself, both in the upper and lower strata, a quantity of silica or sand was found incorporated: In the various marles, clay was superadded to these two; and from the clay downwards, through the oölites, sandstones, and gneiss, lime was found in a greater or less proportion, in some cases forming the chief substance of the rocks themselves, as in the case of the Purbeck, Portland, and Yorkshire stones: in the Bath stone it is mixed with oölite clay—in the magnesian limestone with magnesia —in the red sandstone, formations old and new, with sand,—whilst in the primary strata we find limestones intermingled with clay and sand, as in the Welsh flags; and among the clay-slate, mica-slate, and gneiss rocks, lime is but sparingly distributed.

Carbonate of lime is a necessary ingredient in all fertile soils, it is always found in them, and in the plants which grow upon them; while those soils which, though possessed of all other requisites, are destitute of lime, are barren; but may be rendered fertile by the addition of this substance.

Caustic Lime, or Quick Lime, as it is termed, was carbonate of lime which had had the carbonic acid expelled by heat, and in this condition had a great affinity for water and carbonic acid. When water is added it falls to powder, with great development of heat, and forms a definite compound of water and lime, called hydrate of lime or slaked lime: the heat is caused by the caloric of the water, which was latent while it remained in the liquid state, being given out as it united with the lime, and became thus converted into solid water in a state of combination. The affinity of quick lime for carbonic acid was very considerable; carbonic acid was always found, as had been shown in a previous lecture, in the atmosphere; hence caustic lime, after some exposure became again converted into chalk. The improvement of heavy clay soils by lime and chalk had been practiced from time immemorial; to explain how they act, and the difference of their action upon the soil, was the next question. If lime be converted into chalk in the soil, why not use chalk at once? Chalk, pure dry chalk, loses 44 per cent. of carbonic acid by burning; but chalk as we ordinarily meet with it contains a considerable quantity of water, so much that such chalk by burning loses 59 per cent. of carbonic acid and water together. Water and carbonic acid may be obtained at home, and if the expence of burning these off be much less than the cost of transport, it is clear that the farmer would be a gainer in this way alone, for he would bring the same quantity of calcareous matter in 41 loads of well burnt lime as in 100 loads of chalk. But, besides, it is worthy of enquiry, whether the chemical action of lime upon heavy lands may not really improve them in a greater degree than the addition of chalk or unburned lime. 1st. A more intimate mixture of the finely pulverized slaked lime with the soil can be made, than of the large pieces in which chalk is obtained at the pit, and this pulverization is obtained at little or no cost of labour or material; moreover, the beneficial effects of lime upon the soil are not confined to those above mentioned, and to the rendering it lighter and more easy to work, which latter is equally the effect of chalk; but caustic lime has a peculiar action upon vegetable matter in the soil, when aided by moisture, and that is by its great affinity for carbonic acid, it seems to induce the carbon of the vegetable matter to unite with the oxygen of the atmosphere, or of any other neighbouring source; and thus, also, form carbonate of lime, while the texture of the remainder is so broken up as to render it more easy of decomposition by the ordinary action of the air and moisture. Mixed with heaps of weeds and vegetable rubbish it produces this effect also on them, and besides, destroys the power of germination of the seeds, thus converting noxious matter into useful manure. It destroys also worms, slugs, grubs, and in some cases even wire-worm. Lime is slightly soluble in water; 750lbs. of water dissolve 1lb. of lime. Carbonate of lime is insoluble in water, but is soluble in water containing any acid, even carbonic acid (this was proved experimentally,) and in this way lime was conveyed to plants in solution. The presence of lime in a soil was also useful to neutralize the acetic acid formed by most plants during germination; all running and spring water contained lime, hence some of the beneficial effects of irrigation. The quantity to be applied varied so much, according to the object proposed to be obtained by its application, that it was impossible to lay down any rule, it must depend on the nature of the soil, the rotation of crops, &c.

Land was said "to tire of liming" when, after several years' addition, it contained as much as the crops grown from it required, or where the vegetable matter of the soil was so speedily exhausted by the continued action of the lime, that any further addition became an injury instead of a benefit.

Gypsum, or Sulphate of Lime, was next spoken of as another mineral production of this country, highly useful as a manure for clovers, tares, lucerne, peas, and other leguminous crops. This salt, which was an union of sulphuric acid and lime, was a product of several of our manufactures, and might be obtained at a very cheap rate. The refuse scale pan of the salt makers consist chiefly of sulphate of lime; the ashes of peat owe their efficacy on pastures chiefly to this substance. Sulphate of lime is slightly soluble in water, and the crops just mentioned contained it in considerable quantity, it having been calculated that a clover crop carried off the land from two to three bushels of sulphate of lime per acre. Land "tired of clover" would be found generally either to be deficient in this substance, or to require to have a part of the subsoil broken up in order to supply it to the crop. Gypsum had frequently been blamed as a manure, for not answering the sanguine expectations of many clover growers; in such cases it would generally be found that sulphate of lime really existed in the soil, and it was something else that the crop required.

CLAY *(alumina)* and SAND *(silica)* were also treated of as manures necessary to be added to soils deficient of them in order to render them fertile.

The next lecture, on the *composition and mode of analysing soils,* was announced for Monday, October 3rd.

EAST CUMBERLAND AGRICULTURAL SOCIETY.

The annual exhibition of stock, &c., by this society, took place on Wednesday, the 18th September, in the outer field of the Castle, Carlisle. The show of stock, although less numerous, was universally admitted to have excelled any previous exhibition in point of quality and shape. The judges of stock were Mr. Wood, Kimblesworth, Durham; Mr. Lambert, Elrington Hall, Northumberland; Mr. J. Wood, Cockermouth; and Mr. S. Rigg, Abbey House, Cumberland. For green crops—Mr. R. Hodgson, Longburgh; Mr. J. Graham, Kirkandrews; and Mr. Gilkerson, Beaumont; whose decisions on the occasion, from the deliberate attention paid by them to their onerous duties, gave very general satisfaction. After the show was concluded, a party of eighty members and friends to the institution sat down to a most excellent dinner, provided by Mr. Gray, at the Coffee House Hotel, under the able presidency of Henry Farrar, Esq., of Scaleby, who was supported by Wm. Hodgson, Esq., Vice-chairman, R. Ferguson, Esq., Harker Lodge, the Hon. — Curzon, J. K. Wilson, J. Fawcett, G. H. Hewitt, James Fawcett, J. Dixon, J. Crosby, Esqs., &c.

After the cloth was drawn, the Chairman gave "The Queen," with three times three. "Prince Albert, and the rest of the royal family," with all the honours.

The CHAIRMAN said the next toast was "The Lord Lieutenant of the County—the Earl of Lonsdale," and as a liberal contributor to this association, they could not do less than drink it with all the honours. Drank with great applause.

"The Lord of the Manor—His Grace, the Duke of Devonshire," with three times three.

The CHAIRMAN said, in giving the toast of "the Army," they could not do less than couple with it the name of the present Commander-in-Chief, "the hero of an hundred fights." Drank with immense applause.

"The Wooden Walls of Old England," with three times three.

"The High Sheriff of the County."

"The Lord Bishop of the Diocese."

The CHAIRMAN said he must now proceed with what might more particularly be called the business of the day; the first document he had to read was the report of the judges of green crops, which was as follows:—

"Sweepstakes for Turnips—6 competitors. We the undersigned, award this prize to Mr. Samuel Rigg, of Abbey House, whose crop was free from weeds, regularly thinned, and the plants well formed and weighty: in all, twelve acres; eleven of Swedes, and one of yellow.

"The other competitors in this class were deserving of great merit for the regularity and cleanliness of their crops. We had the pleasure of seeing a very fine crop of turnips belonging to Mr. M. Brown, Cummersdale, growing upon land that had produced a very heavy crop of potatoes this year.

"The sweepstakes for potatoes were withdrawn, there being only two competitors. We had the pleasure of seeing a very fine crop, belonging to Mr. Atkinson, of Long Croft, growing upon land not worth more than eight shillings per acre.

Inspectors, { JOHN GRAHAM,
ROBERT HODGSON,
WILLIAM GILKERSON."

The Chairman then read over the award of the judges, as follows:—

Short-horned Bulls above 2 years old—premium, 8*l*. In this class there were 3 entries: Mr. David Bird, of Catterlen Hall, 1st, with his Red Bull "Tomboy," by Gainsford (2044); Mr. Dixon, of Broadwath, 2nd, with his "Son of Monarch." The winner in this class was much admired.

Short-horned Bulls under 2 years old—premium, 4*l*. For this premium there were 8 entries: Mr. Clemitson of Stanton, 1st, with his bull, "Young Atlas," by Prime Minister (2456); Mr. Unthank, Netherscales, 2nd, with his bull, "His Royal Highness," by Mr. Watkin's Chorister (P. 725, 3rd vol).

Short-horned Bulls under one year old—premium, 2*l*. 6 entries: Mr. R. Hodgson, of Longburgh, 1st, with his "Son of Chorister; Mr. James Thompson, of Kirkhouse, 2nd, with his "Son of second Duke of Northumberland." The winner in this class was greatly admired, and afterwards sold for a long price.

Short-horned Cows above 3 years old, in calf or milk—premium, 3*l*. 10 entries: Mr. Sober Watkin, Plumpton, 1st, with his roan cow "Whitefoot," by Herrington (2121); the Earl of Lonsdale, 2nd, with a "Daughter of Priam."

Short-horned Heifers under 3 years old—premium, 3*l*. 7 entries: Mr. George Blaylock, Beugh, 1st; Mr. John Graham, Kirkandrews, 2nd.

Short-horned Heifers under 2 years old—premium, 2*l*. 8 entries: Mr. S. Watkin, 1st; Mr. S. Watkin, 2nd. These heifers were much admired; they were got by St. Helena (son of Hopewell).

Fat Cows or Heifers—premium, 2*l*. 3 entries: Mr. John Graham, Kirkandrews, 1st.

Fat Steers—premium, 2*l*. 2 entries: Mr. J. Sowerby, 1st.

GALLOWAY STOCK.

Galloway Bulls above 2 years—premium, 8*l*. 4 entries: Mr. Marshall, Long Park, 1st; Mr. Gilkerson, Beaumont, 2nd. The winner in this class was much admired.

Galloway Bulls under 2 years—premium, 4*l*. 4 entries: Mr. R. Gibbons, Moss Band, 1st; Mr. Palmer, Hall Flat, 2nd.

Galloway Cows or Heifers above 3 years—premium, 3*l*. 7 entries: Mr. Gilkerson, Beaumont, 1st; Rev. Mr. Bailey, 2nd.

Galloway Heifers under 3 years—premium, 3*l.* 6 entries: Mr. Gilkerson, 1st; Mr. Johnston, Pedder Hill, 2nd.

LEICESTER SHEEP.

Second shear Leicester Ram—premium, 2*l.* 9 entries: Mr. Watkin, Plumpton, 1st.

Third shear Leicester Ram—premium, 2*l.* 5 entries: Mr. W. Bell, Highberries, 1st.

Best pen of 5 Leicester Ewes—premium, 2*l.* 2 entries: Mr. Watkin, Plumpton, 1st.

Best pen of 5 Leicester Gimmers—premium, 2*l.* 4 entries: Mr. Watkin, Plumpton, 1st.

PIGS.

Best Boar of any breed under 4 years—premium, 3*l.* 7 entries: Mr. Watkin, with his Leicestershire Boar "Bobby Shafto," 1st; Mr. Fenwick, 2nd. The winner in this class was universally admired for his immense size and symmetry—his live weight being 76st. of 14lbs. to the stone.

Best Sow—premium 2*l.* 4 entries: Mrs. Donald, Solway House, 1st; Mr. Watkin, Plumpton, 2nd. This class was highly commended by the judges; a better show of pigs was never seen at Carlisle, since the establishment of the society.

HORSES.

Blood coaching Mare—premium, 3*l.* 10 entries: Mr. Rickerby, Crosby, 1st; Mr. Ferguson, Harker Lodge, 2nd.

Brood Cart Mares—premium, 3*l.* 4 entries: Mr. Birrel, Rosetrees, 1st; Mr. M. Brown, Cummersdale, 2nd.

Two years old saddle or harness Colt or Filly—premium, 3*l.* 6 entries: Mr. R. Gibbons, Moss Band, 1st; Mrs. Aglionby, Nunnery, 2nd.

Three years old saddle or harness Colt or Filly—premium, 3*l.* 4 entries: Mr. Graham, Cubby hill, 1st; Mr. Gilkerson, Beaumont, 2nd.

Two years old cart Colt or Filly—premium, 3*l.* 9 entries: Mr. Dixon, Broadwath, 1st; Mr. J. Birrel, 2nd.

Three years old cart Colt or Filly—premium, 3*l.* 4 entries: Mr. Rickerby, 1st; Mr. Ferguson, 2nd.

Sweepstakes for best one year old Colt or Filly for harness. 2 entries: Mr. Patrickson, Kirklinton, 1st.

Sweepstakes for best Colt or Filly Foal for Harness. 5 entries: Mr. Richardson, Wetheral, 1st.

Sweepstakes for the best 4 year old Horse for saddle. 2 entries: Mr. Magnay, 1st.

Sweepstakes for the best 2 year old coach Filly. 2 entries: Mr. J. Graham, Carlisle, 1st.

Sweepstakes for the best three year old coaching Colt or Filly. 2 entries: Mr. Sewell, Newlands, 1st.

Sweepstakes for the best saddle or harness foal. 2 entries: Mr. Patrickson, Kirklinton, 1st.

Sweepstakes for the best half bred Cow in milk. 3 entries: Mrs. Aglionby, Nunnery, 1st.

EXTRA STOCK.

Premiums were awarded to the following stock by the judges:—

Mr. Watkin, Plumpton, 2 heifer calves, 11 months old, very splendid animals.

Mr. Unthank, 2 heifers, 1 year and six months old; very good.

Mr. Gilkerson, 3 bullocks and 1 heifer, 2 years old; good.

Mr. Patrickson, harness colt, 4 years old.

Do., 1 year old colt.

Mr. Magnay, 4 year old harness colt.

Do., 1 year old, do.

Mr. Blaylock, 1 year old cart colt.

Mr. James Forster, a cart foal.

Mr. J. Richardson, a coaching foal.

Mr. R. Steel, a foal.

Mr. M. Brown, 4 years old colt.

Mr. Wannop, a foal.

Mr. Nichol, 10 Leicester lambs.

Mr. Watkin, 2 sow pigs, under 16 weeks. Very handsome animals.

The Chairman having now concluded the various awards, proposed a toast which he was sure would be received by the company with pleasure, and drank with hearty cheers. It was the health of those gentlemen who had so kindly acted as judges in the show ground that morning; for when they considered the difficulty of obtaining the services of men whose opinions were worth having, and moreover, the absolute necessity of having men whose judgment could be relied on—when such were found, they should be treated, not merely with the respect due from one gentleman to another, but in such a way as would show we felt the obligation they conferred by their services. He would therefore propose the health of "the Judges" with three times three. (*Loud applause.*)

Mr. Wood, of Kimblesworth, Durham, returned thanks for the honour they had done himself and the other judges. It was gratifying to know they had discharged their duties in a way to meet the approbation of those most interested in their decisions. He begged also to congratulate the society on the excellence of the show they had that day witnessed. They had but to go on as they had hitherto done; last year was an improvement upon the year preceding, and the exhibition that day was a very decided improvement upon that of last year; many of the animals shown were of first rate excellence, and quite capable of competing with those of any local society in the kingdom. (*Loud applause.*) Mr. W. concluded his remarks by thanking the company for their indulgence, and wished their valuable institution every success. (*Cheers.*)

The Chairman said he had next to propose the healths of "the unsuccessful candidates," wishing them better luck in future; they were rather a numerous body, and it was somewhat difficult to select a name to associate with the toast, as, of course, no one could suspect the chairman to be one of the body. (*A laugh.*) He trusted, however, the defeats of that day would not cause them to lay in their exertions, but to go on with a determination to win next year.

Mr. Dixon, of Broadwath, with the permission of the Vice-chairman, begged to couple the toast just proposed with the name of their worthy chairman, wishing him better luck next time. (*Loud cheers and laughter*). The toast was received with three times three.

The Chairman said he felt placed in the unpleasant situation of being obliged to stand up and thank the meeting for telling him he was dead beat. (*Laughter*). But he hoped their compassion would induce them to lend a favourable ear to his observations. He was exceedingly proud to see them met together that evening: although he had been beaten, he was glad to know that there were better sheep in the show than some that he had brought, but he would try to do better next time, and he hoped all who were unsuccessful like him would act upon the same feeling. (*Applause*). Mr. F. concluded by returning his sincere thanks for the very kind manner in which the meeting had met the toast, and begged to drink all their good healths. (*Cheers*).

The Chairman again rose, and said it was his pleasing duty to propose the healths of his more fortunate brethren, "the successful candidates;" and he had no difficulty in finding a representative for them, as in the award he had just read, there was one name so frequent that it seemed as a matter of course that it should be that of the representative of the successful candidates. (*Hear, hear.*) He recollected on a former occasion when an award was read at Penrith, the name recurred so often that those at the table constantly exclaimed, "Again! again! again!" and here it might well be the same, for that gentleman appeared to act upon the determination of old Blucher, to be always forwards. (*Applause.*) He proposed with the successful candidates, the health of Mr. Sober Watkin, who deserved great credit for introducing such excellent stock into this county, and for the manner in which he had kept it up. (*Loud cheers.*) The toast was received with full honours.

Mr. Watkin said, for the kind manner in which his health had been proposed and received by their worthy chairman and the company, he begged to return his best thanks. He could assure them he occupied at that moment an enviable position, having exhibited stock in 10 classes, and been successful in nine; such being the case, the society may be well aware that he had not left his best animals at home. In conclusion he begged to congratulate the association on the rapid improvements that were making in agriculture under its favourable auspices, and hoped that the members who had been unsuccessful on that day, might, on a future occasion, occupy a better position. (*Applause*).

Mr. J. Dixon, in a complimentary manner, proposed the health of the successful competitor in the green crop—Mr. Rigg. (*Cheers*).

Mr. Samuel Rigg acknowledged the toast, and said he felt proud at being placed in the situation of successful competitor for green crops, because he knew that he had competed with some excellent farmers. (*Hear, hear*). But it was not the first time he had occupied it by many, and he always had to return thanks, and therefore obliged to go over the same ground. (*Hear*). In stating that he felt proud in being successful, he was so, because he considered the green crop the most valuable of all crops which the soil of this country could produce—excepting none. (*Cheers*). When they looked at the stock exhibited that day, and saw the high state of perfection it had attained, he asked, would it have ever been brought to such perfection had it not been properly fed? Good feeding was necessary as well as good breeding, and what food was better than Swedish turnips? (*Cheers*). If the crop of turnips sold at the rate of 1d. per stone, and yielded 20 tons per acre, it would produce 13*l*. or 14*l*. per acre. (*Hear*). Some had raised as much as 40 tons per acre—but if it was calculated at 30 tons, there was a produce of 20*l*., and he asked what grain crop could compare with that? (*Cheers*). He referred particularly to his experience in the growth of turnips. He had at a previous meeting of the society urged that the stitches for turnips should be tried at a yard, two feet, one foot, and eighteen inches, apart; and in consequence of his having stated his intention to try it, he had been invited to state the result. The weight of those planted a yard apart was upwards of 23 tons an acre, while those a foot apart was only 22 tons an acre—thus they increased with the distance. He tried again next year with the stitches at 18 inches apart, when they proved successful. His experience had taught him that the stitches for Swede turnips should be as nearly three feet as possible, and that when thinned from 12 to 14 inches apart, they yielded the greatest weight. After some valuable remarks, Mr. Rigg concluded by thanking the meeting for the attention with which they had heard him.

The Chairman then proposed "the Members for the County," which was well received.

"The Members of the City" were also proposed by the Chairman.

J. Fawcett, Esq., proposed the health of the chairman, who had so greatly promoted the hilarity of the evening—three times three.

The Chairman next proposed "Success to the East Cumberland Agricultural Society," and he hoped he might be allowed to couple with the toast the names of certain officers of the society, to whom its prosperity was greatly owing, and with whom it ought to be identified. He then alluded to the secretary and treasurer in terms of deserved eulogy, and concluded by coupling the toast with the names of Mr. Donald and Mr. Bowman—three times three.

Mr. Donald, of Linstock, said that as the worthy treasurer had left the room, he begged to return his best thanks for the very flattering manner in which their healths had been received. He was ready and willing at all times to do his best for the society, but he was only sorry his services were not so efficient as he could wish, still the society were welcome to them such as they were, and even if they were ten times as valuable. (*Applause*). For what trouble he had, he was more than repaid by the merit of the exhibition that day. He was highly pleased with that exhibition, and more particularly with the decided improvement perceivable in the Galloway stock. (*Hear, hear*). He knew it was not equal to the short-horns, for no one was at rest until he had got the best of that kind, but he owned that he was glad to find the Galloway stock also making a decided advance. (*Hear, hear*). Mr. Donald concluded by thanking the company.

The Chairman rose and said, that the money received at the door that day, at 1s. per head, (and they knew that subscribers were admitted free,) amounted to 30*l*. 14s. 6d. (*Applause*).

The Chairman then proposed the health of their Vice-Chairman, who had so kindly come forward that day to fill that position which would qualify him for occupying the chair next year. He hoped on that occasion they would not only drink his health, but rally round him. (*Hear, hear*).—three times three.

The Vice-Chairman said, in looking forward to filling the chair next year, he felt his inefficiency to discharge its duties as a chairman ought, but he relied on the indulgence of the meeting. (*Hear, hear*).

The Chairman next proposed "The West Cumberland Agricultural Association," and success to it. (*Cheers*).

The Chairman then gave "The Trade and Manufactures of Carlisle," coupled with the name of Mr. Cowen. (*Cheers*).

Mr. Cowen acknowledged the toast. He congratulated the agriculturists on the fine harvest of the year, and said that the bounty of providence in this respect also greatly benefited the manufacturers, not so directly, perhaps, as the farmers, but still in a secondary manner, and he hoped it would be extensively felt in removing that manufacturing distress which had so pressed upon the country of late. (*Cheers*).

The CHAIRMAN then gave "The Strangers," and coupled the toast with the name of the Hon. Mr. Curzon.

The Hon. Mr. CURZON expressed his acknowledgment of the toast, and his satisfaction at witnessing the show that day.

The CHAIRMAN then proposed "The Press," which was acknowledged, and after several excellent songs, the meeting separated.

THE FARMER.

No. 11.

ON FEEDING HORSES AND CATTLE.

On feeding horses and cattle! why, every body knows how to feed horses and cattle! That is an assertion that cannot be borne out by facts, for if the knowledge of feeding, that is, proper and judicious feeding, was as universally known as it is pretended to be, we should not hear so many complaints of a scarcity of fodder, and frequent illness among horses and cattle. The waste of fodder through improper management may be calculated to average about twenty per cent., or one-fifth part of the whole consumption; therefore it becomes a duty to point out some remedies that may at least lessen the evil, if not entirely remove it; and in endeavouring to attain the desirable object, the following suggestions may be deemed worthy of consideration.

First, on the feeding of horses. So much has been written on the management of horses by men of science and skill, that it may be thought presumptuous and useless writing any more; but the subject is not exhausted; the *plain* farmer may wish to know something about it, and one or two experimental hints may be of service.

It has been found by experience, that hay when cut into chaff goes further and is more beneficial than uncut, for being chaffed the horses masticate it much better, and the more all food is masticated the more it becomes charged with the saliva, and is consequently more easy of digestion in the stomach, and horses are not disposed to feed so greedily on chaff as they do on long hay: when hungry, and eating long hay, they swallow a great portion before it is half chewed, and therefore the stomach has to perform double duty—its own digestion, and that that should have been done by the teeth. In feeding with corn it should be an invariable rule never to give corn without a due portion of cut straw or hay mixed with it: giving clean corn to horses has often been attended with serious consequences; horses will bolt it whole, and it frequently passes through them in the same state; therefore, instead of strengthening by its nutritious quality, it weakens the animal by distending the stomach and injuring the intestines, producing inflammation, with its long train of attendant diseases, causing the death of many a valuable horse. A small portion of bruised potatoes or carrots mixed occasionally with the other chaffed food is very beneficial, as they assist in keeping the requisite coolness and moisture inside. Bruised furze or gorse, mixed with the cut hay or straw, is much approved of as an occasional change of diet for horses, but must not be given too often, as it is generally considered too heating.

There are other points that require nearly as much attention as feeding; these are cleanliness and ventilation. Your stables should always be kept clean, dry, and properly ventilated—the racks and mangers cleaned every week—the stalls swept every day—the wet litter cleared out every morning—the walls white-limed frequently, and they and the loft or ceiling kept free from dust and spiders' web—and particular attention must be paid to the ventilation at all times, to keep the air in the stable pure and sweet. It is a mistaken notion that all stables should be kept close and warm; for horses, like human beings, require to breathe pure air to preserve health; and although horses are accounted hardy animals, is it not reasonable to suppose that they must suffer considerably when brought out of a *hot*, close stable to the cold air, before they are set to work, and sometimes in winter turned out to a bleak field, where they frequently stand shivering under the leafless hedge, not attempting to graze?

Before horned cattle are brought in for the winter, the beast-houses and sheds should be thoroughly cleaned and whitewashed with fresh lime, and always kept free from dirt; the manger where the fodder is placed should be swept at least once every week, and kept perfectly clean and dry at all times; thereby you would ensure a great saving of food, for a less quantity would suffice, the cattle would eat it with better appetite, and being free from the mouldy dirt, it must be more healthy and nutritious. Cattle, like horses, require pure air and clean food to be healthy. Attention is also required in keeping the beast-houses and sheds free from wet and dung. A little daily care would prevent that unsightly and filthy appearance of cakes of dried dung adhering to the tails and hind quarters of some housed cattle; their beds should be kept clean and dry; and if a beast does lie in the wet occasionally, it is not much trouble for the cow-man or maid to wipe the dung off with a wisp of straw before the creature is turned out; the doing so would promote health in the cattle and improve their appearance, and no doubt if the example was set by a few, it would soon become general; in that case we should not see the poor cattle carrying the tokens of their owner's shameful neglect until *nature* removed them by the change of hair in May or June. Clean cattle would be a recommendation and proof of the care and industry of the servants attending them. Cattle that have a tendency to become *hidebound* should be curried and cleaned like horses; the skin would thus become supple, and the animal's health considerably improved.

DELTA.

October, 1842.

In your insertion of the report of the autumn meeting and cattle show of the Llandovery Agricultual Society, held on the 21st September, out of the "Caermarthen Journal," I will thank you to correct the following errata, and add the additions:—

Errata.

No. 18,	for	3*l.*	read	2*l.*
28,	..	3*l.*	....	1*l.*
41,	..	3*l.*	....	2*l.*

90, add "Mr. Jas. Jones, Llwyndewi."

Additions, being omitted in the Journal.

"To Mr. Anthony Williams, Llangadock, for the best Hackney Stallion, a premium of 10*l.* 10s."

"To Mr. James Howard, Llandovery, for the best Cart Stallion, a premium of 5*l.*"

EXPERIMENTS

ON THE PRODUCE OF AN ACRE OF WHEAT AND THE WEIGHT OF STRAW, LEAVING STUBBLE TWO INCHES, EIGHT INCHES, AND TWELVE INCHES HIGH, AND ON BEST AND TAIL WHEAT USED FOR SEED, MADE BY MR. LUNGLEY, AND READ AT THE MEETING OF THE WITHAM AGRICULTURAL SOCIETY, ON THURSDAY, OCTOBER 6.

No. 1.

One acre reaped, leaving a stubble on 2 inches high.

Produce as follows, viz.:—

Qrs.	bus.	pk.	qts.	pts.	
4	2	1	0	1	
0	0	0	4	1	gleaned
4	2	1	5	0	produce per acre, weight per bus. 64lbs.

Weight of straw (very dry) Smoothy's short straw wheat, 26 cwt. 1 qr. 20lbs.

No. 2.

Same day, leaving a stubble 8 inches high (observe, 6 inches in length difference.)

Qrs.	bus.	pk.	qts.	pts.	
4	2	0	0	1	
0	0	0	7	0	gleaned.
4	2	0	7	1	produce per acre, weight per bus. 64lbs.

Weight of straw per acre 23 cwt. 1 qr. 6lbs. (observe, straw very dry.)

No. 3.

Same day, leaving a stubble 12 inches high (observe only 4 inches higher than the last)

Qrs.	bus.	pk.	qts.	pts.	
4	1	1	1	0	
0	0	3	4	0	gleaned.
4	2	0	5	0	produce per acre, weight per bus. 64lbs'

Weight of straw per acre 21 cwt. and 22lbs. (observe, very dry.)

Observe, good plant of Wheat sown after clover, summer very dry, wheat short, grown upon clay land.

No. 1.

Value per acre of the produce.

One acre of wheat, stubble 2 inches high.

Qr. b. pk. qts. pts.	£	s.	d.
Produce 4 2 1 5 0 at 7s. per bus. or 56s. per qr.	12	0	3
To 26 cwt. 1 qr. 20lb. of straw, say 28s. per ton or 1s. 4d. per cwt., or 15s. per load of 36 trusses.	1	15	0
	£13	15	3

No. 2.

Value per acre of the produce.

One acre of wheat, stubble 8 inches high.

Qr. b. pk. qts. pts.	£	s.	d.
Produce 4 2 0 7 1 at 7s. per bus. or 56s. per qr.	11	19	0
To 23 cwt. 1 qr. 6lbs. of straw, at 1s. 4d. per cwt.	1	11	0
	£13	10	0

No. 3.

Value per acre of the produce.

One acre of wheat, stubble 12 inches high.

Qr. b. pk. qts. pts.	£	s.	d.
Produce 4 2 0 5 0 at 7s. per bus. or 56s. per qr.	11	18	6
To 21 cwt. and 22lbs. of straw, at 1s. 4d. per cwt.	1	8	3
	£13	6	6

Observations.—Suppose there were no gleaning.

	£	s.	d.
Three pecks of wheat would be left in the high stubble more than in the lowest, at 7s. per bus.	0	4	9
Value of straw more in the low stubble than in the high	0	6	9
Difference between low and high stubble per acre .	£0	11	6

Remarks.

	£	s.	d
One acre of wheat cost for reaping, leaving a stubble 2 inches high, with beer	1	5	0
One acre leaving a stubble 12 in. high, with beer	0	12	0
	£0	13	0

NO GLEANING.

Qr.b.pk.qt.pts.pr.bus.	£	s.	d.
4 2 1 0 1 at 7s.	12	0	0
To 26 cwt. 1 qr. 20lbs. of straw..........	1	15	0
	13	15	0
Deduct expences reaping	1	5	0
	12	10	0
No. 1.	12	10	0

NO GLEANING.

Qr.b pk.qt.pts.pr.bus.	£	s.	d.
4 1 1 1 0 at 7s.	11	13	0
To 21 cwt. 22lbs. of straw	1	8	3
	13	1	3
Deduct expences reaping	0	12	0
	12	9	3
Balance to loss in reaping 12 in. high	0	0	9
No. 3.	12	10	0

	£	s.	d.		£	s.	d
Expences reaping one acre of Wheat 2 in. high	1	5	6	Value of produce....	13	15	3
				Deduct expences....	1	5	0
				Net balance	12	10	3
Expences reaping one acre 12 in. high....	0	12	0	Value of produce....	13	6	9
				Deduct expences....	0	12	0
				Net balance	12	14	0

	£	s.	d.
Wheat reaped 12 inches high cost	12	14	9
Ditto 2 inches	12	10	3
Loss by low reaping per acre....	0	4	6

This calculation includes the *gleaning* corn.—See the other side.

A sheaf of straw was placed upon the table, with the following description:—

"1st August, 1842.—One sheaf—girth 36 inches—stubble, six inches high.—Smoothy's short strawed wheat.—It will be observed by the numbers, the nearer the ground the greater weight of straw.—Every six inches is *about* 3½ cwt. of straw to the acre, when the straw is perfectly dry.—There is *exactly* the same number of straws in each parcel, tied up in 20 straws, as the lengths were cut off."

Mr. **Beadel** added that Mr. Lungley had valued the straw for agricultural purposes, but Mr. Hutley put it at the market value; and they would find it would be a great advantage if they could sell their straw, for if they could not sell it the low reaping was rather a loss than a profit. *(Cheers.)*

The Rev. J. **Cox.**—I am glad of that because you get the gleaning for the poor.

Mr. J. **Hutley.**—It will cost 6d. more per qr. to thrash.

Mr. **Beadel.**—Mr. Lungley put the straw at 15s. per load, but it is worth 30s. in a town like this.

The **President.**—Before I venture to give an opinion on the facts and figures you have stated there, I hope other gentlemen of greater experience than my own in this matter, will favour us with their observations or statements, with the view of ascertaining what may be the result in regard to their sentiments. I confess I have my own opinion on it, which I may state presently; but I hope other gentlemen will favour us with their opinion, for we think it may have some weight with the country. When we consider the hundreds of years that poor people have been in the habit of gleaning, and when we consider the advantages of a particular mode of cutting when the wheat is snarled, I think as farmers, as landlords, and proprietors of the soil, it is right and necessary that we should come to some practical conclusion on it.

Mr. Cox.—I will ask one or two questions on it. We all know that Mr. Lungley is the most correct man that can be selected to make an experiment of this kind; therefore, we may be satisfied that his conclusions are correct, and that is a great thing to begin with. In that statement you begin with the two inch reaping, then go to eight, and then to 12; but in the sums I lost the calculation of the eight inch. Did you go from two to twelve?

Mr. Beadel.—If I did it was my fault, not Mr. Lungley's, for it is stated here. [Mr. B. read it.]

Mr. Cox.—What is the difference in value between the two and the eight inch?

Mr. Beadel.—5s. 3d. in advantage of the eight inch, with the gleaning added to it.

Mr. Cox.—What is the difference between the two and the twelve?

Mr. Beadel.—3s. 3d. as against the twelve.

Mr. Cox.—That is taking into calculation the expense of reaping, and the value of the straw?

Mr. W. Hutley.—Putting the straw at 15s.

Mr. Cox.—Don't it require more barn-room for the two inch reaping than for the twelve?

Mr. Lungley.—It does not cost you anything for haulming, and the haulming and carting are not less than 5s. per acre.

Mr. C. C. Parker.—I think I understood that the gleaning was added to the value of the first.

It was stated it was added to all three.

Mr. Parker.—Then what is the value of the gleaning that goes into the farmer's pocket, which would have gone into the poor person's pocket?

Mr. Lungley.—The value of the gleaning is something like 6s. per acre at twelve inches high, but at two inches it is less than 1s.

Mr W. F. Hobbs.—I wish to ask whether he considers that 1*l.* an acre for reaping the two inch is a proportionate price to 8s. for reaping the eight inch? It strikes me there is a great difference between the two; and I think it is not necessary to give 20s. an acre for reaping.

Mr. Wm. Hutley.—I believe the origin of this test began with me, because straw has of late years been valuable indeed, and I went into this to get a vast quantity of straw, and get a profit. And then I considered it would be a compensation to the labourers for gleaning by giving 20s. an acre for reaping, for double the quantity of money goes into the labourer's pocket, and double the number of men are employed. The men were coming back from Dengie Hundred by hundreds, I may say by thousands; they came to me, and instead of one day's work they got three by reaping it low. Therefore it is no loss to the poor. We find Mr. Lungley has got a calculation of the straw at 15s. Now I maintain that it ought to be put at what it would fetch in the market: he could make 30s.—I have made 40s. Mr. Lungley has got 5s. for twenty pints of beer, but we know 2s. 6d. will pay for that. Therefore that is 2s. 6d. to be struck off; and when you have got 15s. and 2s. 6d. on, you will find 22s. profit from low reaping, and a vast deal more goes into the labourer's pocket.

Mr. Lungley.—I think a man will earn more by reaping at 8s. for twelve inches than at 20s. for two; and I will offer two sovereigns that this is the case.

Mr. W. Hutley.—It is no great profit to a man to reap at 20s., but it gives a vast deal of labour to more men.

The President.—This discussion is a most interesting one, and I think we ought to come to a practical decision as regards the members in the room—that we should come to some intelligible principle on it. I have heard that Mr. Canning said there were only two things on which he was sceptical, and they were facts and figures. (*Laughter.*) Now if I understand the case, as it is stated by Mr. Lungley and Mr. Hutley, they come to contrary and adverse opinions on it.

Mr. Lungley.—I don't see that.

Mr. W. Hutley.—There is nothing between Mr. Lungley and me.

The President.—Not even a straw? (*Laughter.*)

Mr. Lungley.—I contend that a man will earn more money at 8s. an acre twelve inches high, than at 20s. for two inches.

The President.—Then in point of fact, what you said is this: that if there is a short harvest in the district of Rochford, and Tendring or Dengie Hundred—as there was a scanty harvest, and I have heard that in Potton Island there is nothing to sell but corn and hay, and everything to import —then it might do; but if there happened an abundant harvest, and there was more demand for men, perhaps Mr. Hutley would hesitate before he adopted it. This year the corn was so snarled that I think every one must have seen that the practice of mowing wheat or cutting it low, has prevailed. I know that leases prevent many from selling their straw, when they could get 35s. a load for it; but I think if men bring back a fair quantity of manure, it is so desirable that England should produce enough for the subsistence of the people, as was pointed out at the Bristol meeting, that the matter ought not to be too closely looked into. (*Hear.*) As a small landlord, I do not hesitate in saying, that if a man is doing the best he can for the land, it is a very injudicious thing to look too closely into that matter. (*Cheers.*) It may be a question whether the farmers have the power or inclination to give 1*l.* an acre for reaping; but I think we must all feel greatly obliged to Mr. Lungley for what he has done. Our prejudices are in favour of gleaning. No one can have witnessed the scenes in a gleaning field without feeling regret that the practice should be done away with; for whether legal or not, no man can grudge the gleaning of his land. The conclusion I come to on the matter before us is, that, excepting in a bad year, or when the corn is snarled, there is not so much to be got by it in a pecuniary view; and much rests on the circumstance whether a man is in a neighbourhood where he can get 38s. or 40s. for his straw. I am glad the question has been so well discussed, as we must feel it has been when we see amongst those who have taken part in it are Mr. Parker, who was examined before the House of Commons, on the agriculture of the country, and Mr. Beadel, who has taken great trouble in promoting agricultural experiments.

Mr. J. Hutley: Yesterday I was asked in Braintree market whether I was one of the new-fashioned farmers or the old. They said the new cut the straw up so close and got so much dirt with the wheat, that they could not give so much by 5s. or 6s. a qr. for it. (*Laughter.*)

Mr. Wm. Hutley: This is dealt out against me for giving the poor man a large loaf instead of a small one. I have been almost hooted down for giving 20s. an acre; but I am satisfied that with it the poor are better off and I am better off, and I am satisfied my sample of wheat is as good as my brother John's, for his is only a statement—they are not facts.

Mr. J. HUTLEY: They are facts, and I will bet you £20 of it.

Mr. W. HUTLEY: I am satisfied that the mowed wheat has dirt in it; but one miller said to me—"I perceive you are cutting your wheat low, and I am glad to see it, for we shall have no dirt in it." I said, "That is the plan I started on."

Mr. PARKER: Mr. Wm. Hutley keeps his men four days about that which on Mr. J. Hutley's system they are only two days. In Dengie Hundred we are so anxious to have the wheat cut quickly that we get men to come 30 or 40 miles to help us; and they are not to be four days in cutting an acre of wheat which they could cut in two. Though I am against paying exorbitant prices, yet if I thereby avoid one wet harvest in six it pays me; and I think we should be injuring ourselves by acting in the way Mr. Lungley states. A farmer once told me that he could not get barley in till he got a shower of rain. I carted mine as quick as I could; he left his for a shower of rain and finished at Christmas eve. (*Laughter.*)

Mr. COX: Mr. Lungley says that the men earn more at 8s. for 12 inches high, than at 20s. for the short. He then says he makes up his statement with the value of the gleaning; so that the man does not earn any thing more.

Mr. W. HUTLEY: My observation was, that by paying 20s. there was twice the quantity of money put in circulation among the poor.

Mr. COX: There is a loss of 4s. an acre.

The following paper by Mr. Lungley was then read:—

At Witham agricultural meeting last October, 1841, the subject of sowing *best* seed was introduced; one gentleman recommended the planting of best beans, and it was understood a trial was made in a garden, and the inferior beans planted produced weak short straw and a light crop, compared to the best seed planted. On the 15th of February last, two acres of beans were planted—one acre of the best sifted and picked over, and the other acre of tail beans, with the best picked out. The quantity *planted* is here produced:—

	Qrs.	Bu.	Pk.
Thrashed 1st Sept., the best produced	4	4	2
Net weight per bushel 68½lbs, or 19 stone 6lbs. per sack (very dry).			
Produce from the tail planted..................	4	4	0½
Weight per bushel 68lbs., or 19 stone 4lbs. per sack.			
Difference per acre..........	0	0	1½

Mr. Lungley had also tried the following experiment:—

The following is the test of two samples of wheat here produced, one acre of each was drilled the 18th of Oct., 1841:—

	Qrs.	Bu.	Pk.
One acre of the best wheat produced..........	4	5	1¾
Weight per bushel, 64lbs.			
Produce from one acre of tail seed wheat.....	4	3	3
Weight per bushel, 64lbs.			
Difference	0	0	2¼

The straw was all weighed, and there were not 20lbs. difference in the weight.

The best wheat was drilled.. 10 pecks per acre.
The inferior .... 7 ,,

Very little difference was observed from its coming up to harvest. By close inspection the tail wheat appeared to have rather a narrower blade and somewhat thicker plant, a stranger could not tell the difference by walking across the field.

It is not by *any means* recommended to sow such inferior wheat. The intention of the trial is to prove that a fair sample of small-berried wheat will produce as much, and as of good a quality as the very superior, and in very wet weather more likely to secure a plant.

DISCUSSION ON MANURES,

BY THE MEMBERS OF THE LOUGHBOROUGH AGRICULTURAL SOCIETY.

On Thursday, the 30th September, the third quarterly meeting of this society was held at the Bull's Head Inn, for discussion of subjects connected with the welfare of agriculture, when the matter of discussion was "The Application of Manures to Grain and Green Crops." The chair was taken by Mr. G. Bakewell, of Lockington, and the vice-chair by Mr. C. Angrave, of East Leake. After the usual loyal toasts had been given, the Chairman called upon S. B. Wilde, Esq., of Costock, to introduce the subject.

Mr. WILDE then rose and spoke nearly as follows:—It is not from any fancied fitness in myself that I am induced thus to take the lead in this discussion, for I am sensible that I have neither sufficient practical experience either in husbandry or chemistry for such an attempt. Nor have I any other qualification to make amends for these important deficiencies, except that, in common with you all, of an ardent desire for the success of agriculture; that we may live in the midst of a prosperous and contented rural population; and that the concentric circles of our well-doing may embrace the artisan and the manufacturer, and may take in every creature of every kind. The agriculturists have the credit of being the most steady and immovable of the body politic; whilst the population of the towns were accused of sacrificing everything to the principle of innovation. Let us not, however, be backward in adopting any practice that is feasible, simply because our fathers knew nothing about it, or the inexperienced prejudice of our neighbours denounces it. I urge this because I have found great disinclination to adopt new modes of culture, and I shall relate to you an anecdote in the course of my address confirmatory of this remark. Nor should we be indisposed to introduce new implements in agriculture, because they abridge so far the employment of manual labour. Where is the spot in this country that has not increased its population with the introduction of machinery? Our early ancestors, in their management of land, left it almost valueless to the owner, and left a dependent population continually exposed to the horrors of famine. For instance, some of the best land in the Isle of Ely, we learn, was purchased for four sheep per acre, and a horse was estimated at three acres. Persons manuring lands were entitled to three or four years' use of them without paying any rent; and even those who folded cattle upon them, to one or two. At this period, too, a quarter of wheat sometimes sold for the value of fifteen sheep. Agriculture has, however, made great advances in the last and present century, and indeed so it must have done, or how could a population increased from five to fifteen millions be subsisted. Nor are we as yet by many steps upon the summit of improvement; nor can this observation be better illustrated than by the recital that a single grain of wheat has been made to produce a multiplication not of "30, 60, or 100 fold; it has produced 570,000 fold in count," and in measure and in weight above three pecks, or about forty-eight pounds. When we find such energy in nature under favourable circumstances, and that Providence has placed those circumstances partly under our control, what diligence should not be excited on our part that we do not blight the beneficence of the Deity! Our neighbours beyond the Tweed accuse us of being much behind them in the application of team labour, as well as in our general system of husbandry, and it would be well if any one acquainted with their system, which they boast has raised the productive powers of their poor soils to a surpassing fertility, compared even with the richest districts of this country, would undertake the subject. At present, we shall confine ourselves to the *surface, and the best mode of fitting it for vegetable productions*—the food and support of animal life. This surface varies materially in thickness in different localities, and is termed the mould. The farmer rejoices when he can cover his plough to the beam with this, but he is not always sufficiently aware how much deeper he may make it, by mixing that surface with some portion of the subsoil, which for want of any inherent vegetable principle, is thought valueless and detrimental, and so it is while it remains undisturbed, and even for a time when exposed to the atmosphere, even should its mineral properties when properly pulverized be suitable to vegetation. This cannot be better exemplified than by the earth we call clay marl. Where a bad subsoil is found to exist with a very shallow surface, and it is discovered that when a portion of that subsoil is accidentally brought up, that it has an injurious effect upon vegetation, the farmer cautions his ploughman to be as careful as he can not to disturb it; whereas a longer sight and more scientific deductions would induce him to direct that the subsoil should be disturbed in order that when a fallow takes place it might have the advantage of atmospheric amelioration and comminution, as well as intermixture with animal and vegetable substances, which we embrace under the name of manures, the result of which will be in a few years that enviable desideratum—mould up to the beam. About thirty years ago, Sir Humphrey Davy delivered and published sundry lectures upon the chemistry of agriculture, demonstrating the elementary constitution of plants, and the fitness of various manures (amongst the rest was included what is called the "new" manure, Guano), from chemical analysis, to give increased fertility to the soil. Sir H. Davy, Professor Lowe, and Mr. Sinclair, say that the best soils consist of three distinct earths—*silica*, best known as sand and gravel; *aluminas*, or clay; and *lime*, which we see in its purest state caustic from the kiln, or as chalk; with small quantities of magnesia, manganesium, and oxide of iron. The more fitly and proportionably these are mixed together, there is the best situation for the growth of the various grasses, provided that a proper quantity of proper manure be applied. These soils enter into the composition of plants in very minute quantities; they may be compared to the stomach, or the animal economy for the digestion of their food, and much depends upon the healthiness of this organ for the elaboration of nutritive matter. A test of the fruitfulness of soils has been suggested by their capillary attraction. A glass tube is inserted in some other glass vessel quite to the bottom, and the latter being filled with soil, water is poured into the tube, and according to the height the water rises in the soil, so is the capillary attraction and fruitfulness of that soil. Soil has also the power of attracting moisture from the atmosphere, and the following experiment proves that this power is commensurate with its richness. 1000 parts of a rich soil absorbed in an hour 16 grains; 1000 ditto of soil worth 45s. per acre, 13 grains; 1000 ditto of soil worth 28s. per acre, 11 grains; 1000 ditto of sand soil worth 15s. per acre, 8 grains; 1000 ditto of soil from Bagshot Heath, only 3 grains. The order in which soils may be arranged according to their attraction for moisture are when they abound chiefly in—1st, animal and vegetable matter in a state of decomposition; 2nd, Alumina; 3rd, Carbonate of lime; 3th, Silica. The more soil is pulverized, the more perfect is its capacity for absorption, and the greater too its power of capillary attraction. Yet earths having in their separate state the greatest power for absorption, have those powers increased by mixture with other earths having less capacity for water. The stiff clays do not readily absorb from the atmosphere. Such soils when indurated by drought are almost as unproductive as sand, and are much sooner dried up than loam; which being a mixture of the separate earths possesses the quality of retaining moisture the longest, and transmitting it the most regularly to the roots of plants. 400 grains of earth dried as far as sun and air will do it will, if composed of aluminous and vegetable substances in the greatest state of absorbency, lose an eighth of its weight by being placed in a porcelain basin over an argand lamp; but sand, under the same circumstances, will lose but from 10 to 20 grains. I have great doubt whether the practice of gathering stones is wise, for they are often highly absorbent and increase fertility. Pure silica will imbibe scarce a fourth part of its weight of water; lime will take up its own weight; and alumina 2½ times its own weight. Silica will allow moisture to evaporate twice as soon as carbonate of lime, and five times as soon as alumina. The addition, therefore, of carbonate of lime and alumina, never fails to increase the fertility of siliceous or sandy soils. The importance of moisture to promote decomposition and digestion is well known to us; in fact, neither of those operations can go on without it. There is another essential, too, in the operations of nature in producing health and vigour in plants, and that is—solar heat. This heat has from certain causes much more effect upon land of one colour than upon land of another. Some experiments made some years ago make it evident that black, in consequence of its not reflecting or turning back the rays of the sun, absorbs the rays of light and heat much more than white, which reflects those rays. A number of pieces of cloth of different colours varying by shades from white to black, were placed upon the snow where the sun was shining, and after being permitted to remain there some time, they were examined, and it was found that while the white lay upon the surface, the black had sunk considerably below it in consequence of its having absorbed the heat; and that the darker was the colour of the cloth the greater the depth to which it had sunk. So in soils, we find white clay heated with difficulty, and being usually very moist, it retains heat by a very little time, while chalk, being drier, retains heat somewhat longer. Black soil containing much vegetable matter, is the soonest heated by sun and air. Rich black mould, containing a quarter of vegetable matter, had its temperature increased from 65° to 88° by sunshine, whilst chalk under the same circumstances was only raised to 69°. Both removed into the shade at 62°, the first lost 15°, and the chalk 4°. Brown fertile soil and cold barren clay each artificially heated to 88° and well dried, was exposed to a temperature of 55°, and in half an hour the former lost 9°, the clay 6°. An equal portion of the clay containing moisture, after being heated to 88°, was exposed to a temperature of 55°, and in less than a quarter of an hour had sunk to the temperature of the room. Stiff clay which takes up the greatest quantity of moisture when poured upon it, is not the soil which absorbs most from the atmosphere; it cakes and presents only a small surface, and vegetation is almost always burnt up upon it, as soon as upon sand. To ameliorate bad soils much may be done by the admixture of the deficient earths, by putting marl on sands, and lime and gravel on clays. To give an instance under my own management, I may state that I took into my own hands a small field that was almost useless to the tenant; in fact, it produced about three sacks of wheat to the acre. It had, a year or two before, failed with clover and was broken up for peas, and produced a wretched crop. I fallowed the wheat stubble, for there was plenty of couch-grass, if of nothing else, but I succeeded in killing it, and gave the land a dressing of lime of 25 quarters to the acre, and after it had been ultimately spread, I ploughed it in. In the spring I gave it a second dressing of 25 quarters to the acre and sowed it with barley, except half an acre, which I had previously sown with Talavera wheat. I did not spread a forkful of manure, and my half-acre of wheat gave me three sacks, or double its former produce, and my crop of barley was 4½ quarters per acre. *(Hear, hear.)* Mr. Sinclair, gardener to the Duke of Bedford, tried the productive powers of a variety of soils, and found that after alluvial soil, clay loam was the most durable in fertility, and that sands, although very grateful for a bountiful dressing of manure, were soon as hungry as ever, and quite unfit for permanent pasture. In an experiment, too, that he made in the breaking-up of a good soil with five exhausting and successive crops, he demonstrated that manure must not only exist in the soil to afford nutriment to the young plant, but that it must also be in an active state of decomposition. (Mr. Wilde then related the experiments.) It appears that by analysis of the soil before and after the exhausting experiment with oats, potatoes, wheat and carrots, the following materials existed in it:

	Fine sand, chiefly siliceous.	Carbonate of Lime or Chalk.	Decomposing Vegetable matter, &c.	Silica of pure Flint.	Alumina or pure Clay.	Oxide of Iron.	Soluble Vegetable matter and Gypsum.
Before	102	160	55	50	25	4	4
After	100	159	48	57	26	5	3

In this calculation, however, the sod is not recorded, although it was consumed, though even taking it into consideration the vegetable matter used up was comparatively small. (The last crop of wheat was very inferior.) After this Mr. Sinclair thought he would go on, and try whether it could not be brought to a good pasture without any diminution in the cropping. He sowed the various grasses suitable to the soil, put in some manure, and before the winter came on he dressed the top with more manure, and afterwards dressed it with more, and found his crops to exceed his expectations; and going on in the same manner he found his produce to have increased rather than diminished. The most valuable manure is unquestionably that from the yard, and it is most melancholy to see with what prodigality it is used. It is frequently laid in a heap and allowed to rot, until its bulk is reduced nearly one half, and its vegetative properties in even greater proportion. The gases and the liquid which escape in fermentation, are discovered by chemical experiments and practical application, to be the most valuable portion of the heap. The woody principle and ammonia are dispersed to the wind, or lost in an acetate that sours the herbage. Ammonia was first discovered in a fossil state, in the neighbourhood of the temple of Jupiter Amanon (hence its name;) and it was supposed to spring from the excrements of the camels assembled there. It is to be found in almost all animal substances. Sir H. Davy placed in a retort a quantity of cot manure, with a receiver fitted to collect the product. In three days a considerable quantity of gaseous fluid was collected, as well as a saline liquid principally acetate and carbonate of ammonia. The retort was on another occasion similarly filled, and the neck of it introduced to the roots of grasses, on which in less than a week the fluid had a very remarkable effect in forwarding their growth; and this is the very matter which the practice of fermenting dung causes to be lost. It will be asked "Then should no fermentation be permitted?" Opinion upon that point is divided, but the judgment of all scientific men declare it should only be incipient, some say it is necessary. Sir H. Davy states, that fresh manure is only too concentrated, and that it should be reduced, and fortifies his opinion by the following experiment. He took a solution of sugar, mucilage, jelly, and tannin principle, the essence of vegetable matter, and found that they would not support vegetation until fermented, after which they did. But he afterwards found that the deleterious effects of those substances arose from the too great concentration of their powers, and thought that probably the organs of the plants, which are so small as to be only discernible with the aid of a very powerful microscopic medium, were clogged up with solid matter; so he reduced the solution, and then the plants of mint grew luxuriantly in all, but best in the astringent matter. He watered some spots in the garden with these solutions, and another spot with common water. Those watered by jelly, sugar, and mucilage, grew most vigorously; and those watered by tannin principle better than common water. Besides the loss of the gaseous matter in fermentation, the loss of heat, a material object to the young plant, is considerable. The late Lord Leicester abandoned the system of fermenting dung before its application, and he found his crops unabated, and his manure go twice as far. Sir H. Davy used solution of super-carbonate, sulphate acetate, nitrate and muriate of potassa, sulphate of soda nitrati, muriate and carbonate of ammonia, on grass twice a week—and in all cases where the weight of salt equalled 1-30th part of the weight of the water, the effects were injurious; but least so in carbonate sulphate and nitrate of ammonia. When the quantity was 1.300 the effects were different. The plants watered with the solution of sulphates grew in the same manner as similar plants watered with rain water. Those acted on by nitrate, acetate, and super-carbonate of potassa, and muriate of ammonia, grew rather better; and those watered with the solution of carbonate of ammonia grew most luxuriantly. With what care, then, should our farm-yard manure be expended to produce the most extensive good! (Mr. Wilde then made several remarks concerning the ridging system, and the advantage of covering the manure as soon as laid upon the land, in order to prevent the escape of its ammoniacal gas; and related an instance in point.) Night soil (he continued) is a powerful manure, and supplies an abundance of food for plants. It might, by a mixture of lime, be deprived of its disagreeable odour, and then be pulverized and used as rape cake. The Chinese, who have more practical knowledge of manures, and their application, than any other people, mix their night soil with one-third its weight of marl, and then make it into cakes, which they dry in the sun; after which it becomes a common article of commerce. Soot is an excellent dressing for land, either on common grass, and owes its chief excellency to its carbon and ammoniacal salts. Its colour also may do something towards warming the ground. The liquor flowing from the consumption of coal in the preparation of inflammable gas, contains acetate and carbonate of ammonia, both produced by the fermentation of yard-manure. Gypsum pulverized without burning, may be usefully employed for the production of sainfoin and clover. It frequently happens that the farmer is disappointed of his crop of these grasses by their coming, as he says, too often. From what cause can this arise but from a deficiency of the matter in the ground, found by analysis to exist in these plants, namely, sulphate of lime? and this is but another word for gypsum. Sulphate of lime, or gypsum, slightly burned, would be a useful top-dressing for turnips; turnips are partly composed of it. Lime in another shape, and combined with an acid we find in the bones of animals, and when they are crushed are found to be an excellent manure on soils fitted for their digestion; for, in addition to the phosphate of lime, they contain a quantity of gluten, and both these materials are discovered in the most valuable of our productions. The common practice is, to use bones on sand and gravel for turnips, and then, in the four course system, there is a crop of wheat. It is probable that the success with which this is pursued, is owing partly to a portion of the bones being unconsumed by the previous courses. On such lands bones have been used with the best effects. I know a farm of 800 acres, that before this bone manure was adopted, exhibited a miserable stack-yard, which when I saw it afterwards, had the appearance of a respectable village of cottages. Clay has a weaker digestion, and cannot, I fear, manage bones, at least I have not heard of such good effects from their application to such soils; but I would recommend the farmer not to be discouraged by unfavourable reports, but upon a small scale to make a trial themselves. A farmer with whom I am acquainted, objected to the ridging system for turnips; and to the entreaties that were used by his landlord to adopt that system, he would always find some "wise saws and modern instances" to justify his adherence to the old plan. At length he tried it. I believe that the landlord bought the implements necessary, and promised to make good any loss the farmer should sustain in the experiment. But instead of the crops failing, it proved a most successful one, and the tenant was honest enough to pay for the instruments. (*Laughter.*) Common salt enters into the composition of grasses, and in small quantities, a dressing in spring has proved of advantage to wheat crops, in giving them great strength in a sandy soil; and I should imagine it would have a good effect in attracting moisture from the atmosphere. Nitrate of soda I have known used with the best effects. This spring I saw it applied to barley, where turnips had been standing till the end of March, and there was a remarkable difference in the quality and quantity of the crop. About 1¼ cwt. per acre is the quantity used. Nitrate of potassa (or saltpetre) would no doubt be found an useful application to grain crops, were it not so costly. It is deserving of consideration, however, whether a solution of this material would not be advantageously employed in dressing the seed. It is important that manure should be kept from excessive fermentation, and for this reason should be kept from the sun and air. The heap should be placed in the shade, and covered with soil; a bank to secure the drainings of the yard would be found useful, for the urine of stock forms a most powerful manure: it contains, in fact, the whole elements of vegetation in a state of solution. Putrid urine is less active than fresh, but still even it abounds in ammoniacal salts. It does not seem desirable to spread lime and yard-manure so quickly in succession, as is the practice with some persons. The lime promotes a too rapid decomposition when used alone, but when mixed with tanner's spent bark, brings that inert matter into a valuable compost. Weeds and couch grass gathered and mixed with lime, before it is slacked, would be a much more judicious practice of getting rid of them, than by burning. The ashes, certainly, are valuable, but the vegetable matter collected and pulverised in the manner I have described, would be much more useful to the soil. By covering dead animals, such as horses, dogs, &c., with four or five times their bulk of soil, and one part of lime, and permitting them to remain for a few months, their soluble matter would impregnate the soil, and render it a valuable manure. Guano was sent to the Board of Agriculture in 1805, and the next year was analysed by some gentlemen, who found it to contain a fourth part of its weight in uric acid, saturated with ammonia of potassa; some phosphoric acid combined with the same bases, and likewise with lime; small quantities of sulphate and muriate of potassa; a little faulty matter sand—this, like pigeon manure, is allowed to produce a powerful but transient effect. If the scouring of ditches and scrapings of roads were got in a heap, and mixed with caustic lime, they would be valuable as manure. Horse-dung in the pastures generally loses nearly the whole of its value from the quickness with which its ammoniacal properties evaporate, as well as its moisture. If it were collected by a child at 1s. 6d. per week, and made into a compost with soil, it would be a gain to the farmer. (Mr. Wilde then made a remark that the person who suffers weeds to remain upon his land until they shed their seeds, is not only hostile to his own interest, but to that of his neighbour and the public; and concluded his able and scientific address by apologising for rising before so many practical men, and affirming that nothing but his zeal for the welfare of agriculture and their wishes should have caused him to do so. He then sat down amidst a round of applause.)

Mr. **Stokes**, of Kingston, next rose. He said he considered the subject before them one of the most important they could take in hand at these meetings. In delivering his opinion upon the matter, he should confine himself to the farm-yard manure, for to that he was most used, and, of course, knew the most about it. In agriculture, the first thing was to make manures good, for what could be the use of consuming straw without anything else with it? With regard to the fermentation of manures, he took some credit to himself; for he had never made up a dung-heap in a field these twenty years. He believed that a tank was very useful for the collection of the liquid manure. Manures of this kind he had spread upon a pasture as a top-dressing, but found it did not answer to his wish; but, if poured upon a large heap of soil, it would make good top-dressing. He did not know what other observation he ought to make, and he hoped others would come forward and state a little of their experience.

Mr. **Kilby**, of Queniborough, said he felt some difficulty in saying anything, for he had been exceedingly puzzled in the management of his manure, and could arrive at no practical conclusions as to the management. He had felt great pleasure in listening to Mr. Wilde's address. There was one point, in particular, struck him, and that was concerning the liquid manure. In his own village there were no less than five or six instances in which the liquid was not preserved, but channels were actually made for it to run out into the street. He was quite of opinion that the liquid was the best of the manure; and all chemists agreed in the opinion as to the strength of the urine of animals. He thought, with the two former speakers, that the vital principle of manure was lost by letting it lie too long, or by stirring it too much, and causing it to lose its best gases. He believed that if manure generally was used in a greener state, and covered up sooner, great advantage must arise from the practice. Some believed that it was better to let it lie on the surface, but, from his experience, that argument was fallacious. There was no way so effectual as the ridging system, and that was much neglected. Every summer fallow ought, in his opinion, to be ridged at the latter end of the year, and the ridges ought to be stirred backwards and forwards, and, if necessary, a horse-hoe ought to be made use of. These ridges let the atmosphere penetrate the earth, and rendered it friable and fit to work. He thought manure ought to be applied before it got into such a state as to allow of its being cut with a spade. He was sorry he understood so little of the matter, but he was no chemist, and could hardly see how a farmer could be, and mind his farm. He certainly would say, that the subject of agricultural chemistry had been neglected since the time of Sir H. Davy, who wrote thirty years ago; for since then nothing new had been discovered worth mentioning. He did think they had a little to complain of on that score; and then, the works of chemists were so obscured with hard words, that common men, who had not studied such subjects, could not understand them. It certainly was very good of those gentlemen to write their books, and make experiments, and labour to improve the produce of the soil, but, from what he had seen of their works, there was scarcely anything he could apply to the management of his farm. He wished heartily that they would try to simplify themselves a little. As to the escape of all those gasses, he believed that it was really a great national calamity. He concluded by expressing a wish that others would get up and give their experience upon the subject, as he desired information.

Mr. **Wilde** rose to make an observation or two concerning the little assistance Mr. Kilby thought they could borrow from the chemists. The terms used in chemistry were peculiar to the science, and were in some measure necessary. Mr. Wilde then went on, at some length, to shew that many of Sir H. Davy's experiments might easily be understood as far as was necessary for their practical application in husbandry. For instance, the application of the ammoniacal gases, that every person can detect with his nose, to the roots of the grasses with good effect, was a proof that those gases were important articles in agriculture, and ought not, if possible, to be wasted by dissipation in the atmosphere.

Mr. **Kilby** said he alluded more particularly to what had been done since the time of Sir H. Davy. There was nothing scarcely.

Mr. **Wilde**: Too little; I am sorry there has been no more. My knowledge upon these subjects is chiefly from books, and is of the most general and most popular kind.

Mr. **Walker**, of Bradmore, said he was a man of very little science, but his strong land farm had given him a good deal of practice (*Laughter.*) He liked his manure not fermented, but fresh and well made. In preparing a field for turnips, some manure was carried into it and laid in a heap for a fortnight, but not quite enough for the whole field. The rest was spread with fresh manure. The turnips came up, and those fifteen rows that had the fresh manure were thicker, and the turnips heavier. When he had been talking to some persons about turned manures, they said they never got a weed after them. He told them that they did not get much out of it at all (*Laughter.*) He believed that turned manure was reduced to a mass of char that was almost insoluble in water. Some said that it sooner got to the young plants, but how that could take place he could not tell, as he thought its insolubility would have a contrary effect. He believed manure should be applied for turnips as soon as the land was clear. He had tried manure in ridges by the side of manure spread all over the ground, and ridged at last, and both had been equally vigorous and fruitful. By turning the earth about they destroyed the weeds and insects in the manure. He generally applied his manure on the strong land in a long shape, and ploughed it in the second time of ploughing. They had ploughed it in sometimes immediately, and had sometimes let it lie for a week, and had found no perceptible difference in the crops. This was upon dead fallows. He should, however, prefer ploughing it in immediately, not so much because of the gasses, but because of the humidity. He bad been very careful not to travel out of his own knowledge of facts. He came on purpose to gain instruction upon the subject, and wished others to come forward and state their knowledge of facts, or relate something, even were it but one fact.

Mr. **Kilby**, alluding to the assertion of the preceding speaker, concerning turned manure being reduced to char, or charcoal, said that charcoal contained carbon, a most nutritive property in manure.

Mr. **Wilde** said that some soils were almost all carbon. The absorbents of plants required, in consequence of their minuteness, that their food should be in an aqueous state.

Mr. **Walker**: That is the reason, I say, that carbon is of no use—because it is insoluble.

Mr. **Wilde**: The earthy matter that goes to the formation of a blade of wheat, or the straw, is only one-fiftieth part of the whole. The rest is all a gaseous substance.

The health of the Vice-Chairman having been given by Mr. Kilby, that gentleman rose and returned thanks. He then went into the subject under discussion, and said that the land upon which he grew turnips was poor sand, and before the inclosure of the lordship, was a piece grazed only by rabbits; now they had very fair crops of turnips from it. Since he could recollect, their crops had failed, but within the last eight or ten years, they had adopted the ridging system, and their crops never failed. They applied the manure in its freshest state, and it was deposited upon the ground immediately before it was used. With respect to the liquid manure, he felt under considerable difficulty. He was aware it was a powerful manure, but it was one that required considerable care in its application. He should state that, in consequence of having different heights of buildings and out-houses, they had suffered the rain water to mix with the manure, and, he supposed, injured it. He would ask what was the best plan for preserving this manure in a pure state, and for managing it properly? He should be glad if any gentleman would express his opinion upon the subject. He had found salt a beneficial dressing upon sand land. The first time they applied salt, it was to some wheat sown broad-cast. They used as much salt as would do about half the field. There was no apparent difference during the growth of the plants, but it was a very dry season, and when the men came to cut the corn, although they did not know about the salt being applied, they remarked, all of them in turn, considerable change for the better when they arrived at a certain place; and on his making an examination, he found a piece of wood he had stuck in for a mark of the distance the salt extended. The rain came on soon afterwards, and prevented them from learning whether there was any difference in the yield. They had always used salt since, and had found the yield much more per acre. They tried soot, and found that it strengthened the straw considerably, but it was more inclined to mildew, and the corn was flinty; and besides this, they did not find the acreable produce at all increased by it.

Mr. **Buckley**, of Normanton Hill, regretted that he had not been present during the whole of the discussion, because he could not, for that reason, take much part in it. He used his manure in a green state, but after it had been trodden down by cattle. He did not advocate the practice of heaping it. As regarded small manures, he thought they were strong stimulants, but did not bring sufficient substance to the land. Where soot had not been used extensively, it was very valuable as a stimulant, particularly on light lands; but on stiff cold lands it did not answer so well. He concluded by proposing the health of his friend Mr. Stevenson.

Mr. **Stevenson** acknowledged the toast, an stated his opinion that much was lost in manure by the evaporation of its gases. He thought the farmer ought to plough in his manure directly after it had been spread upon the land. The subject was one of much importance, and deserved the serious consideration of the farmer; for if the loss of the gases could but be accurately ascertained, it would be found very great. He had experienced great advantage in using salt as a dressing for wheat, and, indeed, it was useful upon any land, from white sand to strong clay. He believed that it increased the yield both in quantity and quality.

Mr. J. H. **Burroughs**, of East Leake, rose to relate an experiment he had made. He gathered the stones from a field, with the exception of three lands, and removed them. The stones from the two outside lands were then gathered and scattered upon the middle one, and from the observations he had made upon the growth and yield of the beans, with which he cropped the field, he believed he could perceive a little difference in favour of the stony land.

The following resolution was then proposed by Mr. Wilde, and seconded by Mr. Kilby:—"That it is the opinion of this meeting, that the farm-yard manure is generally used in a state of too great decomposition, and that much loss is generally sustained by the escape of the gaseous and liquid manure." On being put by the Chairman, the motion was carried unanimously.

During the meeting, the healths of the various speakers and others were given and responded to.

At the Tyneside Agricultural Meeting, Mr. Jobling laid before the company the result of certain experiments which he had been trying with the new manure, called *guano*:—

One acre of land, of good quality, cropped with oats, was top-dressed with two bushels of sifted house ashes, thoroughly mixed with 200lbs. of guano, after the oats were well in brear, at a cost of 30s. The produce was 31 bolls 2 pecks of oats, and 66 stones of straw; that on the two half-acres adjoining to it, unmanured, being 27 bolls 3 pecks, and 57 stones of straw; leaving 3 bolls 3 pecks of corn, and 9 stones of straw, to set against the cost of manure; which it was obvious it would not meet.

One acre of inferior land was treated in the same way as the above, and produced 15 bolls of oats, whilst the two adjoining half-acres produced 12.

An acre of land, cropped with wheat, was treated in like manner, and no perceptible difference was found between it and the two adjoining half-acres, unmanured.

The like quantity of guano and ashes was applied to an acre of land, in the autumn of last year, which was afterwards sown with wheat. The crop upon this acre was very perceptibly lighter than that on the two adjoining half-acres, which had been dressed with 15 single-horse carts of farm-yard manure.

The like quantity of ashes and guano was applied to an acre of land, which was afterwards sown with Swedish turnips. The crop, up to this time, had kept ahead of the two adjoining half-acres, dressed with 25 single-horse carts of farm-yard manure. Another acre was dressed with *twenty-four* bushels of ashes and 200 lb. of guano, and at the present time was superior to the first. The like experiments were tried on white turnips, with a like result.

100lb. of guano was added to a manuring of 10 single-horse carts of rough farm-yard dung per acre; and the crop on this acre, in white turnips, was at this time by far the best of all that had been experimented upon.

The result of these experiments (said Mr. Jobling) seemed to be, that for wheat, guano was of little or no use; for oats, of not sufficient value to repay the cost of it; but for turnips, it was a very valuable manure, and most so when combined with rough farm-yard dung. In conclusion, Mr. Jobling mentioned the result of an experiment in reaping. Two adjoining acres of barley, as nearly equal in produce as could be selected, were reaped, one with the hook, the other with the small scythe. The produce was as under:—

On that cut by the scythe, 60 stooks, weighing 6,240lbs
———————— hook, 43 stooks, weighing 5,762lbs

In favour of the scythe............ 478lbs.

Which, at 208lbs. to the thrave, would give more than four thraves to the acre, or nearly one-fifth more straw than the hook. The cost of the two processes was equal.

REPORT OF THE HOLM CULTRAM AND DISTRICT FARMERS' CLUB,

Since its Formation in January, 1842.

At the January meeting the evening was spent in preparing rules and bye-laws for the guidance of our society.

February 2.

This evening we had our first meeting for discussion, the subject being the most economical and effectual method of under-draining, introduced by our vice-president, Mr. Grainger, who read to the club several very able quotations from periodicals, &c., on the subject. He then gave his own views and experience upon it, which certainly were highly praiseworthy, and such as no practical under-drainer need fear to carry into effect.

I may here remark, that our members were this evening put out a little, owing to the idea of rising to address an audience; but long before the conclusion of the debate, which was long and animated, it wore off, and I am now happy to add, has not since made its appearance.

Several members detailed in succession, in plain, homely, intelligible, but very likely ungrammatical language, their different systems of under-draining, as followed on different soils and subsoils, both with tile and other materials; and finally the following resolutions were adopted, viz.:—

1st, On clay soils, tiles, covered with grass or straw previous to refilling the drain, is considered the best method of under-draining; but care should be taken to suffer as little as possible of the clay to be put into the drain again.

2nd, That on moss lands sods are best.

3rd, That on all other soils except strong clay, when tiles are used, they should be laid on soles of shale or wood.

March 2.

The subject this evening was on the best mode of rearing stock, and the kind of stock most adapted to the district.

Much general business was transacted in the fore part of the evening, respecting the sweepstakes we had this day met to decide, and in taking the respective entries; after which the President, who had the introduction of the debate this evening, gave us a very interesting and practical account of the method pursued by him in rearing young cattle. First he detailed his method of rearing calves during the first nine weeks, which he considered of much importance, as after that period they are generally turned into the field to grass, where they can in some measure shift for themselves. His system is to give his keeping calves four quarts of new milk per day during the first three weeks, in three equal daily meals; for the next three weeks five quarts per day; and from six to nine weeks six quarts per day of half new and half skimmed milk; and taking the value of the new milk at 1d. per quart, and the skimmed at ½d., the cost at the end of nine weeks is 1*l*. 3s. 7½d., whereas if the calf had got only skimmed milk during nine weeks, the cost would have been 13s. 1½d., only 10s. 6d. less than feeding with new milk. He spoke, of course, as a breeder of black stock, and some allowance ought to be made as to the quantity for short-horns—say one-third. With regard to the kind of cattle most adapted to the district, Mr. Rigg contended strongly for the Galloway breed, providing the breeder did not breed for feeding out. Some of our members contended that short-horns were best, and also easiest maintained; and one member preferred a cross between the short-horn and West Highlander.

At the conclusion the resolution passed was:—

That Galloway cattle are most suitable for the district.

No other resolution was put to the vote.

April 6.

The varieties of spring corn, and the best method of preparing land for the same.

This subject was not expected to produce much discussion, but the introducer managed to get up so many systems, and divide the subject into so many kinds, that the debate was very long, and many very interesting details were communicated. The resolutions adopted were as under:—

1st. On the varieties of oats as adapted to particular soils and climate—1st, on strong clay or heavy soils, common oats best; 2nd, on moss lands, potato oats best; 3rd, on fine free soils, Hopetoun ditto best, with the exception of some particular rich patches of land, where potato oats was considered best.

2nd. Varieties of barley as above—1st, that the common barley of the district is better than Chevalier.

3rd. On preparing land for oats—1st, light ploughing is best for lea ground; 2nd, that early spring ploughing is better than late.

4th. Preparing for barley—3rd, that the best method of preparing land for barley is by turnips, either eaten off or drawn, and that the land should have two harrows after; lastly, barley after wheat is an improper course in all circumstances.

May 4.

On the best method of preparing land and manure for turnips, sowing turnips, and their management afterwards.

This discussion occupied about four hours, and of course it is out of the question to particularize it here. Suffice it to say, that I have liberty to publish our worthy president's method of raising turnips, as detailed at our club in May.

The resolutions come to on a majority of votes being taken (though some of them were stiffly contested), were as follows:—

1st. Time of giving land intended for turnips the first furrow—autumn or spring; early spring best.

2nd. Deep or light ploughing say 6 in. deep or 4 in. thin—deep best.

3rd. Manure, raw or fermented—raw best.

4th. Ditto—quantity, twenty-one horse-loads per acre.

5th. Breadth of stetch—common turnips, 2 ft. 9 in.; and Swedes 3 ft., best.

6th. Quantity of seed per acre—for Swedes 2lb.

7th. Ditto, ditto—common turnips, 1½lb.

8th. Distance of thinning between the plants—common turnips, 12 in.; Swedes, 15 in.

9th. Whether thinning by hand and then hoeing, or only hoeing best—hoeing only.

June 1.

Mr. Ross, who proposed the discussion on the planting and culture of the potato, was unable to attend, from the effects of an accident, in consequence of which our president introduced the subject in his stead. Much of the discussion related to the extensive failure of this valuable plant; and, as has generally been the case since the commencement of the disease, whenever the subject has been discussed, many very contrary opinions were advanced. Over-heating was generally considered the principal evil, either in the heap or after planting. The resolutions agreed to were:—

1st. That fermented manure was better than rough strawy manure for potatoes.

2nd. That whole sets are much better than cuts.

3rd. That the width of the stetch should be proportioned to the length and quantity of top.

4th. That 18 inches is a proper distance for whole sets.

5th. That it is better to let the potatoes be fully ripe before taking up.

July 6.

This evening our subject was hay making in its various branches, and at the close of the meeting the following resolutions were passed:—

1st. That the proper time to cut lea grass for hay is when the bloom falls, and that early cutting of meadow grass is preferable to late.

2nd. That lea grass should be turned, and meadow grass spread, as soon as dry on the top, after the first day from cutting, and put into cocks proportioned to its dryness.

3rd. That in fine weather lea hay should be carted without spreading out, but that meadow hay should be spread out and re-cocked in larger cocks, and if the grass be very succulent, it will require spreading out a third time.

4th. That in unfavourable seasons it is good to take off the tops of the haycocks, remove the cocks upon fresh ground, and then replace the tops neatly.

5th. Salt at the rate of 14lbs. to a ton of hay is recommended.

August 3.

We had bare or waste fallow for a subject, and came to the following resolutions:—

1st. That spring ploughing is best for the first furrow.

2nd. That on free soils green crop is preferable to bare fallow.

3rd. That on all occasions the local lands of this district ought to be ploughed twice across.

4th. That after twice ploughing across, it is better to ridge up the land, and split out again previous to the seed furrow, then to half-ridge, and gather two for the seed-furrow.

September 6.

The best method of harvesting corn was brought forward, but, owing to the forward season, the harvesting was nearly concluded, and with so little labour that the subject was much less interesting than it would have been for some years before.

The principal points debated were the respective merits of reaping with toothed sickles or hooks, and also mowing, and the state with respect to ripeness in which the grain ought to be when cut. The resolutions were:—

1st. That wheat and oats should be cut fresh rather than ripe.

2nd. That barley ought not to be cut till ripe.

3rd. That generally sickles are better than either hooks or scythes.

4th. That the stacks should be placed on pillars or walled bottoms, in preference to the ground.

October 7.

The discussion this evening was on wheat sowing and prevention of disease. The member who introduced the subject quoted largely from periodicals connected with farming, on the soil, manure, time of sowing, and other points of good husbandry calculated to give some pretty strong hopes of a good crop. He then spoke of disease, and its prevention, and in closing made some very appropriate remarks from his own experience as a wheat grower. The discussion was long and animated, and in conclusion we agreed:—

1st. That white wheat is best for the finer soils of the district, and red or yellow wheat for poorer and more sterile lands.

2nd. That the time of sowing depends much upon the season, but say as a general rule fallows from October 10 to 25, and lighter turnip soils about the middle of November.

3rd. That the smut or black head in wheat is best prevented by steeping—called here brining—in human urine stale, and drying afterwards with lime in a caustic state.

4th. That in dry seasons like the present the drill is much better than hand sowing.

FOREIGN MEAT, &c.—American pigs are fed by ranging in the woods and eating acorns, and, afterwards, with the best of all descriptions of food for fattening, Indian corn, frequently ground into meal. It is this description of food that causes the pork to be so fat as it is, and it is this that induces the fine flavour which is discoverable in no other pork. A few days since I heard the captain of a vessel say that American pork was too fat, and that it had a peculiar flavour. I, in consequence, obtained a piece of Canada pork out of a barrel belonging to a parcel which arrived in this port six weeks since. I had it boiled, and invited the captain and some others to examine the result. Without one exception, it was pronounced to be "the sweetest, the best-flavoured pork they had ever tasted." Now, as this description of pork has of late been selling in Liverpool, it could go into consumption at 3½d. per lb., and afford a fair rate of profit to the retailer; and, for ships' stores, it could be put on board for 27s. to 30s. per barrel, or about 2¼d. per lb. So much for Sir R. Peel's new tariff, which, happily for the kingdom, will be the means of reducing the enormous price which butchers' meat had attained. We have latterly had incontestible evidence, through large importations, of the fine quality of American cheese and hams. In my house I have consumed a couple of the latter, for which I paid a retailer 6d. per lb.; they are equal to Westphalia, for which I not long since paid 9d. These hams were cured in the Western States of America, and were sent down the Ohio to New Orleans, where they were shipped to Liverpool. Pickled hams have also been imported, of the finest description, which have been selling at about 35s. per cwt. duty paid, or 3d. per lb.; and, after the 10th of October, they doubtless will be sold to the small consumer at a low price. The Americans kill all their pigs and cattle during cold weather and the winter season, so that tainted meat is less likely from that than any other quarter. Hogs' lard from the States is likely to be imported in large quantities, the duty being reduced 75 per cent. In this country it is made use of for a variety of purposes, particularly as a substitute for butter, by confectioners; but I have never known it used here as a substitute for butter in the frying of fish. During a period of more than twenty years' residence in the United States, I never knew fish to be fried with anything but hogs' lard. This article will be sold, ere long, in the English market for less than half the price of butter. I view the provision tariff as an introductory measure which will secure Sir Robert the landed interest to aid in putting down the West India monopoly the next session of Parliament. —*Correspondent of the Liverpool Albion.*

REFUSAL OF GUERNSEY TO PERMIT THE IMPORTATION OF ENGLISH OR FRENCH CATTLE INTO THE ISLAND.

[FROM THE GUERNSEY STAR OF MONDAY, OCT. 3.]

COURT OF CHIEF PLEAS, GUERNSEY, OCT. 3.—The Assembly of Chief Pleas was held this day, his Excellency the Lieutenant-Governor, who has a deliberating voice, but no vote at the meeting, was present during the whole of the sitting. The court having, at a meeting of the Royal Court on the 24th of September, heard council on the petition presented by the town Douzaine, praying for the repeal of several ordinances, some of them restraining, and one of them prohibiting, the importation into this island (Guernsey) of cows and heifers from France, passed the following ordinances:—

"1. That no foreign—therefore no English—bull shall be imported without the permission of the court, under the pain of a fine of 100 *livres tournois*, and confiscation of the animal.

"That all foreign female calves, heifers, and cows, imported into the island, shall be marked with the letter F on the left shoulder and right thigh, by being branded with a hot iron.

"3. That on the arrival of such cattle to the island, information thereof shall be given to the harbour master before they are allowed to quit the quay, under a penalty of 30 *livres tournois*, and that they shall there be branded under his direction, the importer paying 10d. per head for the cost of the operation.

"4. That such cattle shall be slaughtered within six months of their importation, under a penalty of 100 *livres tournois*.

"5. That all calves born of foreign cows in the island, shall be slaughtered within two months of their birth."

Our time will not permit us to notice at any length the proceedings of the Court of Chief Pleas in this, but we shall do so in our next, especially in regard to the splendid piece of legislation which they have performed in regard to foreign cows. We must satisfy ourselves at present with asserting that the act which they have passed will satisfy no one, and must either exist as a dead letter, or be speedily and unconditionally repealed. One thing, however, we cannot allow to pass without a word of reprobation. The act directs that foreign cows, landed in this island, shall be branded. Now this is an operation which inflicts great pain upon the animal, and which ought not to be for one instant tolerated. Some years ago the court forbade the practice of bleeding calves and oxen, because it was cruel, and yet, by their present ordinance, they gave their sanction to a much more painful practice. Let the members of the court consult their own feelings, and then declare to which they would most object—to suffer a moderate bleeding, or to be branded with a red hot iron.

SEED WHEAT.

TO THE EDITOR OF THE WEST BRITON.

SIR,—This being the principal agricultural subject of the present season, I am induced to submit to the more intelligent of your country readers, some observations upon it by the celebrated Sprengel, late professor of agriculture in Brunswick:—

The material point given by Sprengel is, that "*the best bread corn is not the best seed corn.* That we may increase the nutritious quality by the soil and the manure, but that for seed this highly nourishing corn is unsuitable.

"Seed corn," he says, "must contain the different ingredients in due proportions; if any of them be deficient, or in excess, the plant will be proportionately imperfect. I have analysed many varieties of the best seed corn from different localities, and have found them correspond so completely in their proportions, both of organic and inorganic ingredients, that they would seem to have grown all on the same ground.

"Some soils are so happily constituted, as always to bear the best seed corn; while others never produce corn that will grow again. By analysis, we find the first never very rich in humus or nitrogen; but well supplied with lime, magnesia, potass, salt, phosphates, and sulphates. The effect of sheep's dung further illustrates this. Corn, richly manured with that dung, contains gluten in large proportions, which in germination reacts so powerfully on the starch, as to overpass the conversion into sugar (the chief nourishment of the germ) and produce vinegar. The best seed corn must therefore contain *much starch*, and *little gluten*; thus the starch is gradually converted into sugar, and the germ properly nourished. But even then, unless it contains also the due proportion of phosphates, &c. (mentioned above), the germination will be stunted or frustrated."

Now gluten is the nutritious part of corn; it is that which makes the best bread, and the greatest quantity from a given weight of flour. Corn, therefore, containing much gluten, is deservedly preferred both by the miller and the baker. And this quality is artificially produced by manuring. Gluten is the nitrogenous part of corn, and the more nitrogenous our manure, the larger the proportion of gluten, and the smaller of starch—the *better* the corn for *food*, and the *worse* for *seed*. *Seed* corn, it seems, should not be raised on very rich soil, that is, not too rich in *organic* matter; and, be the seed what it may, the *produce* may be rendered as glutinous as we please by nitrogenous manures. (Something analagous has been observed respecting potatoes—the Scotch lowland farmer preferring his seed potatoes from the moors and highlands).

How far this principle may apply to the different varieties of seed wheat, it is for the intelligent farmer to consider. I am, Sir, &c.

October 9, 1842. J. PRIDEAUX.

[See Mr. Lungley's experiments on best and tail wheat, page 350.—ED. F. M.]

ON DRAINING AND SUBSOILING.

Sir,—On reading a work entitled "Johnston's Elements of Agricultural Chemistry and Geology," he states, that it is false economy not to use robs with tiles even when draining the strongest clay soils, for that by the influence of air and running water the clay becomes so soft, that in the course of 10 or 15 years the tiles sink, and become valueless; and that in Scotland and the south of England, thousands of acres of drains have become made up and valueless." Having for the last few years been an extensive drainer on strong land, I have frequently had to cross old tile drains, which had been laid 10 or 15 years, and always found them in a perfect state, except where the openings had become, from neglect, choaked up. I therefore feel rather doubtful of the correctness of Chambers's remarks, and if any of your readers, who have used tiles without plates, will give their opinion on this subject, they will much oblige me, and also give useful information to other young drainers. I always use plates where the ground is soft.

While asking information, I take the liberty of offering an opinion on subsoiling strong land. I strongly recommend all farmers who have this description of soil to manage, to cut their drains every 8 yards asunder, instead of the old system practised in this neighbourhood, of draining every 4 yards; and instead of cutting the drain 16 or 18 inches deep, never to cut them shallower than 24 to 28 inches; then, when the land has become thoroughly dry, to set them across the drains, first having worked the land perfectly level, by which means the subsoiled land will be nearly double the value of that unsubsoiled; but never on any account to use the subsoil plough when the land is not perfectly dry, for the advantage gained by subsoiling is a complete breaking up of the strong clay subsoil, which, a moment's reflection will point out, can only be accomplished when the land is dry; on the contrary, when the land is wet, by drawing a plough through, it becomes more tenacious and closer than before. This in my opinion is the reason why we hear so many contradictory opinions of subsoiling.

I remain,
Your obedient servant,
A Yorkshire Farmer.

HORSE SHOEING.

(TO THE EDITOR OF THE FIFE HERALD.)

Sir,—Having for a long time past observed the prevalence of a very destructive practice in this county in the shoeing of draught horses for road purposes, I am anxious to draw the attention of horse proprietors to the subject, in order that they may be led, as far as possible, to remedy the evil. I have four valuable animals under my treatment for lameness, that has been caused by the improper method of shoeing. I have from time to time complained of it to some of the proprietors of these horses, and have also pointed out to them some of the evils arising from it, but owing to the want of the necessary attention on their part, or by yielding to the caprice or fancy of some incompetent person, these complaints have not been sufficiently attended to—nay, on the contrary, they have been frequently treated with contempt. The foot of the horse is formed of very dissimilar parts, some of which possess great sensitiveness, some of the others none. There is also a great variety in the formation of hoofs in domesticated horse's feet, though there is not so much variety in the form of the feet of those horses which live in their natural state. This difference in the form of feet must be caused by the artificial means applied to them, and the different purposes to which the feet are applied. This circumstance is deserving of a little attention, and however improbable it may appear to those who have not considered the subject closely, yet he who has had frequent opportunities of seeing the diseases of the feet, and has taken the trouble to enquire into their causes, will be led to a very different conclusion. The wall or crust of the hoof grows from the coronet, and descends in an oblique direction to the sole of the foot, and is composed of horny fibres closely united together by a glutinous or adhesive substance, more compact than the fibres of the hoof. In some of the coarse hoofs these fibres are seen distinctly, and grow downward and forward, and then by causing more growth of hoof at the bottom and front part of it, this part is termed the toe of the foot. Horses living in their natural state being without shoes, as a necessary consequence, the toe of the foot comes first into contact with the ground; it thus follows that the wear of that part of the foot must be more than any other part of it. By putting shoes on them the reverse takes place. There is no wear of that part, except from disease or deformity. The heels and quarters being more under the centre of the animal's body, receive more of his weight, and also the weight of his burden, which prevents these parts from so much overgrowth. This, however, is more applicable to their foremost feet. In the shoeing of horses, it will be observed how necessary it must ever be to cut a portion of the hoof from the front part of it, and also to cut a part of the sole in front of the foot. This is termed shortening the toe. The bad effects that arise from the too frequent omissions that are made in this part of the country in the shoeing of horses are innumerable, and while lameness is so often the consequence, the gradations between soundness and absolute lameness are so numerous, that it is difficult to trace the disease back to its source.

There are other great evils practised in the shoeing of draught horses, such as the weight of their shoes, some of them being 5lbs. each; added to which the extraordinary length of the heels and calkens that are put on them, make it very painful indeed for an animal to travel with them. Let it be remembered, too, that the first motion of this animal's leg is an outward, lateral, or side motion; and when these long heels and calkens are stuck firmly into the ground, or in the joints of pavements by the weight of the animal's shoes, by the voluntary action of his limbs, and by the weight of his burden, the first motion of his limb is impeded. Besides, the heels and calkens wear so irregularly, that in a very short time he is going either upon the one side of his foot or upon the other; thus, by preventing the first motion of the animal's limb, combined with the other neglects alluded to, he is very soon fatigued and gets stiff, and by the repetition of such practice he gradually becomes lame. I would therefore recommend to the proprietors of these valuable and useful animals, to give the subjects of which I have been treating a little more of their attention. By doing so, and by adopting a better course, they will have the satisfaction of perceiving their horses remaining strong and healthy, instead of becoming lame and useless. I am sure that this, to themselves, is positive gain, and, in regard to the animals in question, it is a most useful dispensation. I have written what I consider to be truth from a feeling of humanity. The horse is a noble and useful animal, and ought not by any means to be abused; but I am sure, if another method of shoeing is not adopted than they at present practise in this district, a great many of the horses at present strong and healthy will very shortly become lame and disabled.—I am Sir, your obedient servant,

Robert Dods, Veterinary Surgeon,
Member of the Royal Veterinary
College, London.

Kirkaldy, 14*th October*, 1842.

RESTRICTIVE CLAUSES IN LEASES—THE LATE DISCUSSION AT HARLESTON—TRANSPLANTATION OF TURF.

In common with many others of your readers, I was a good deal interested in the late discussion, which took place some time since, on the subject of the Cultivation Clauses in Leases at the Harleston Farmers' Club, and have since read the observations that have been made upon that discussion by certain friends and opponents of what may not inaptly be called the *free action* principle. When, however, I use this term, I by no means intend to convey the idea of unlimited freedom of action to a tenant in the management of his land, without reference to, and in a manner independent of, the proprietor of that land. That indeed would, in unprincipled and injudicious hands, quickly degenerate into licentiousness rather than liberty. In vulgar parlance the tenant would be more free than welcome. I may be mistaken, but I do not believe that any farmer, even if he met with a landlord good-natured enough (I should say foolish enough) to give him an unconditional occupation of his land, would be so unreasonable as to wish to hold it on such preposterous terms. No! None will question the propriety of introducing certain covenants, call them restrictive if you will, into all leases; and herein appears to me the error into which certain commentators on the Harleston discussion have fallen. They suppose, and wish to have others suppose, that the question in debate was one of restriction or no restriction; virtually, in short, of lease or no lease. It was no such thing; but neither more nor less than an examination into, and an exposition of, the practical effects of absurd clauses, which, however advisable and even necessary in barbarous times, when agriculture was but in its infancy, and landlords deemed it incumbent on them to teach their tenants how to farm, are wholly unworthy of the present improved state of things, and ought to be forthwith amended, if not abolished altogether. It will be seen that I allude principally to the clauses which enjoin, without distinction of soil, condition, or qualification of the occupier, a certain mode of working the fallows. Modern improvements in agricultural mechanism go for nothing here; and Mr. Gedney, who has perhaps done more than any other farmer to exhibit the nature, value, and extent of those improvements, is put on a par with Tom Nokes or John Stiles, whose ideas and ambition extend not beyond the ploughtail; and to whom the "custom of the country" is the one grand object of dread and veneration.

Mr. Gedney said much to expose the folly of restraining the judicious use of effective scarifying (for the old plough clauses are nothing short of this) in the culture of arable land: but whatever he might say, and however cogent his reasoning, it must fall infinitely short of the example he has himself furnished of the efficacy of a good and powerful scarifier, like Biddell's, in the cultivation of a rather unkind soil. A glance at his farm (and it lies very convenient for passing travellers) will at once satisfy the intelligent observer of the truth of this remark, and afford an additional proof of the correctness of the poet's axiom—

> "That precept may do much, example more."

In much of what was said by Mr. Harvey and others, on the advantage of taking a crop of turnips by valuation, rather than by the system of charging for tillages, and their endless concomitants, *ad libitum,* I fully and entirely agree. It opens a door for imposition which ought to be forthwith and for ever closed; for, situated as the majority of incoming tenants are with regard to their successors, how, in the nature of things, is a proper and sufficient check to be kept on the various operations of the outgoing tenant, whose sole object and interest is thus made to rake and scrape together every item which can by possibility be collected to swell out a bill against his unfortunate successor—in short, to make hay while the sun shines. Whereas, if the amount of these charges are made to depend on the weight and quality of the turnip crop, his interest and that of the incomer are identical. His object then is not to do a great deal of bad work for the sake of a long bill; but what he does, to do well, for the sake of a good turnip crop. He is, in fact, paid on the right principle; and the payer has value received for his outlay.

Summing up the arguments on each side of this important and interesting question, it does appear to me reasonable, on the one hand, that the landlord should have every security against wilful mismanagement on the part of his tenant: but on the other, that the latter should be exempt from anything and everything approaching to vexatious and impertinent interference, under pretence of guarding the interests of the landlord. There is a medium between just restriction and unjust restraint. This is the object which should be sought and obtained by both parties. No good landlord would refuse to give—no good tenant to accept it.

Leaving this subject, my attention has just been attracted by a friend to that of transplantation of grass, called in the first instance by Mr. Bloomfield, of Warham, the inventor—inoculation. The process is well known to many, but as there may be others to whom the details are not so familiar, perhaps I shall be excused if I draw from them materials for finishing this article.

I well remember, in the year 1817, seeing the first specimen of this ingenious method of forming old pasture, near Mr. Bloomfield's house; it was then comparatively in its infant stage, but all who saw it were struck with the superiority of the system over the more precarious method of sowing grass seeds—at best a very slow, and, as I have said, a most uncertain way of proceeding ; for if the seeds made use of are as clean and pure to the eye as can be procured, the young plants are sure to be mixed with, and often seriously injured by, a spontaneous growth of weeds of all descriptions, weakening, if not entirely choking, the tender young grasses. Old farmers maintain, and I am partly disposed to agree with them, that it is next to impossible to restore an old broken up pasture to its original state of excellence. Hence the severe (in my opinion necessarily severe) restrictive clause in most leases against the breaking up of old grass land. Mr. Blomfield has, however, by his excellent invention, done much to facilitate the attainment of old pasture in a comparatively short space of time. His plan is this : we will suppose the land wanted for pasture to be under tillage. It should be rendered as clean and even as possible : and the time for conducting the operation any open winter month, from the latter end of October till January, or even later. The flags intended for transplantation ought to be selected with peculiar care, for when you are doing, it will cost no more to plant the best than the worst grasses. Avoid particularly couch (*triticum repens)* ; soft, or creeping-rooted couch *(holcus mollis)* ; creeping-rooted bent (*agrostis repens).* In short, all the running-rooted grasses should be rejected. If the new turf is intended as a lawn, to be kept constantly short, by all means avoid the rough cocksfoot *(dactylis glomerata)* ; for, though in fields a valuable and quick-growing grass, this very property makes it an eye-sore where appearance is an object. In fact it remains green and luxuriant, consequently patchy, when everything around it is short, and perhaps burnt up. If on a larger scale, use a paring plough. Cart the turf to where wanted in broad-wheel carts, and set it as you would muck, in heaps large enough and thick enough for the intervals required. Then chop the turf into pieces about three or four inches square, place them at about 7 or 8 inches from piece to piece, pressing each down with the foot. One acre of turf will thus plant nine acres of arable ; that is, supposing the acre to be wholly stripped ; but if the original pasture is intended to be retained, then take a strip and leave a strip of the old turf. The surface ought then to have a good coat of muck. The gaps will thus soon fill up, and the field be no worse for the robbery that has been committed on it. When the transplanted part is finished, the whole ought to be well rolled with a heavy roller, not only to obtain as level a surface as possible, but also to secure the newly planted flags from the effects of frost and draught. In addition to the turf, it is a good plan to sow a few pounds per acre of white clover and permanent red clover, but these had better be deferred till the spring, as the young seedlings will not stand frost. Keep stock off it the first year, or till the plants have got good hold. The expenses of the process, according to the late Mr. Henry Blyth, of Burnham, are as follows :—

	A.	R.	P.
Extent of grass land pared, to produce plants for transplanting ; the turf being clean pared off..............	1	2	18
Extent of arable land transplanted with the above turf....................	11	0	15

Expense.	£.	s.	d.
To ploughing or paring 1a. 2r. 18p. of turf, at 10s. per acre...............	0	16	1½
To carriage of 600 loads turf, fifty days work for one horse, at 3s.............	7	10	0
To lads driving carts, one boy 14 days at 1s. 2d., and one ditto 4 days at 10d. per day.....................	0	19	8
To scarifying 11a. 15p., when covered with turf cut in pieces, at 2s. 6d. per acre	1	7	8¾
To labourers filling, cutting, spreading, and planting the turf, at 30s. per acre	16	12	9¾
Total............	27	6	4
Or, per acre......	2	9	2¼

T.

RIDGE VERSUS FLAT DRILL.—*(To the Editor of the Doncaster Gazette.)*—Having heard various discussions on the relative merits of ridging and flat drilling white turnips, I resolved this year to bring the matter to the proof, by trying the experiment in two or three fields. I tried in one instance flat-drilling on land which had laid a fortnight, against ridging and drilling on fresh mould ; the flat 16 inches apart ; the drilled or ridged 27 ditto. They were both carefully hoed and singled ; but the flats yellowed very early and stopped growing ; whilst the ridged luxuriated in their ample space, and grew to an uncommon size : the difference in the weight of crop per acre is to the amount of some tons. Adjoining these I ploughed down manure, and drilled on the flat, but they scarcely did better than the other, though they had all the same top-dressing ; whilst the ridged ones, immediately contiguous, with the same quantity of manure, did exceedingly well. A few further observations I made on these experiments may not be without interest ; we took a few loads of dung, or rather litter, fresh from the fold, the exact soil that modern science so greatly approves, but the turnips rejected the new-fashioned views, and grew both sulkily and tardily ; indeed the difference was astonishing between this and Christmas-led and once-turned manure. In the same field some were not rolled, some done with a wooden roller, and some with a heavy stone one, across. The effect on the turnips was slight, but on the weeds important ; for, just according to the weight of the roller, had the weeds been repressed in their growth. Should these observations be worthy a place in the *Gazette*, you will, by their insertion, greatly oblige yours, &c.—An Islonian.

P.S.—I venture an assumption for the purpose of eliciting remarks from some of your numerous readers, that fold manure acquires more vegetative qualities during the process of fermentation than it loses by the escape of ammonia.

TAYLOR'S PATENT VICTORIA LAMP.—Having recently given this newly-invented lamp a trial, we can report favourably of its merits. The novelty of the invention consists in its adaptation for burning tallow and all kinds of fat, instead of oil. The tallow is liquified by the application of boiling water, which renders it fluid in a few minutes. The use of lard for this purpose is becoming very general throughout the United States. The Victoria lays claim to economy and cleanliness, producing a light of greater power and brilliancy than is obtained from oil lamps, and is free from smoke or any impure vapour. Mr. Jeremiah Taylor, of Birmingham, is the inventor. This lamp will also consume common oil, if required, as the solar lamp.

REVIEW.

ELEMENTS OF CHEMICAL ANALYSIS, INORGANIC AND ORGANIC. By Edward Parnell.—8vo.

Taylor and Walton, London, 1842.

It is now generally admitted by farmers, that chemistry offers the means by which agriculture may be most speedily advanced. The analysis of soils, and of the plants growing upon them, are objects of the first importance, even to the farmers who look only to immediate practical results, without reference to the prospective advantages to be derived from a more thorough acquaintance with the principles of vegetable nutrition. We know that there are certain soils which are incapable of maturing wheat. The analysis of such soils would immediately indicate the cause of this incapacity, and would point out the means by which their fertility might be insured. Even the qualitative examination of such soils is often sufficient for this purpose. We know at present many practical farmers of great experience and reputation, who think a good chemical chest an indispensable appendage to their farm stock. Those who have visited the beautiful example farm at Whitfield, belonging to the truly liberal minded Earl of Ducie, must have remarked the chemical laboratory which is attached to the farm house. We believe that we shall live to see the day, when every large farmer will keep a salaried chemist on his farm, just as the Lancashire manufacturers do in their establishments at the present day. If manufacturers have found it profitable (as they have done) to pay liberally a scientific man to reside with them, for the purpose of enabling them to outstrip their more tardy competitors in the same trade, we see nothing absurd in the idea that it would be worthy of the attention of the *large* farmers to do so also. In fact we know of one who has already done so, and we should like to see the practice more prevalent. But as this consummation of things cannot be looked for, before agriculture has assumed more the rank of an exact science, we should in the mean time be glad to see farmers themselves learning to manipulate a little in the qualitative examination of their soils.

Analytical chemistry has long been at a low ebb in England, and this is partly to be attributed to the remarkable fact, that we do not possess a single English work on this branch of chemical science. We therefore hailed with pleasure the announcement of Mr. Parnell's work, and the expectations which we formed of it have been fully realized. Its arrangement is excellent, and the descriptions of processes remarkably clear and explicit. The first part of the work is devoted to the qualitative examination of every variety of substance. It is true that its comprehension requires a certain amount of chemical knowledge. Mr. Parnell has, however, in a great measure obviated the necessity for much acquaintance with chemistry by throwing into a series of tables the appearances presented by the application of various chemical re-agents. At first it may cost the novice some labour, to acquire the necessary manipulations, but the results which must follow from its accomplishment will fully compensate for the labour and time expended. Mr. Parnell's work has not been written for farmers, but as a general work of reference. In conclusion, we cordially recommend this work to those who are disposed to aid themselves in examining the constituents of their soils. Mr. Parnell deserves the best thanks of English chemists for his masterly work, and we earnestly hope that it will prove the means of elevating the analytical chemistry of our country, a branch of the science in which we have long been deficient.

AGRICULTURAL QUERIES.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—I trust you will allow me, through the medium of your widely circulated paper, to ask a few questions on a subject upon which I am wholly ignorant and unacquainted.

1st.—Whether chloride of lime can be successfully applied for cleansing and purifying foul, musty, or stale beer barrels or wine casks.

2nd.—Its mode or way of application.

3rd.—Whether, if applied, its chemical or other properties will affect or injure the beer, wine, or other liquor that may be put in the casks afterwards; and how long after it has been applied they will be fit for use.

If any of your correspondents or subscribers from their experience or knowledge of the subject can give any information in answer to the above queries through the columns of your paper, I shall feel greatly obliged; and I have no doubt many of your readers will do the same, for this has been a very extraordinary season for turning beer stale and fouling the casks, and rendering them totally unfit for use again.

I remain, your obliged servant,

Near Oxford, Oct. 8. A Subscriber.

Sir,—I would feel obliged to any of your correspondents if they could inform me the best way to prevent the worming of carrots. For several successive years I have attempted to rear carrots for culinary and other purposes in the garden attached to my farm; but every successive attempt has been a successive failure. Having been told that late sowing was a sure preventive, I this year tried the experiment, but find my crop no better than in former years. At first they grow very rapidly, till they have attained the thickness of a goose-quill, and then the leaves begin to droop, and gradually die away. On taking them up, I find the root all run through with a small white worm, about the thickness of a common pin. The garden is a fine sandy soil.—I am, Sir, your most obedient servant,

A Dumfries-shire Farmer.

A correspondent wishes to know the ingredients of which a sheep-washing lotion is composed which was exhibited at the Bristol Meeting by Mr. W. Ogborne, of Shirehampton, near Bristol; or where it can be obtained, so that he can have an opportunity of testing its alleged efficacy and merits.

Sir,—I shall feel obliged if you or any of your readers can inform me of the particular merits, if any, possessed by Williams's Patent Churn; also what plough is best adapted for use in New Zealand, to which country I hope to proceed shortly.

I am, Sir, your constant reader.

London, Oct. 4. An Emigrant.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

WEYHILL FAIR.—This important and greatly frequented annual fair for the sale of sheep, hops, horses, cheese, and other commodities, was held on Monday last, and will continue throughout the week. It commenced with the sheep fair, and perhaps upon no previous occasion has there been witnessed so fine a show of sheep, as were offered for sale at this fair. The weather was beautiful, and caused the sheep to appear to the best advantage. In consequence of a great number being unsold at the late Appleshaw fair, and being offered again at Weyhill, the number penned was unusually large. The whole of the space allotted to this department, was fully occupied, and we believe so large a quantity has not been exhibited for many years past. The number has been variously stated—some persons say there were at least 200,000, and the general opinion seemed to be that this number was nearly correct. The attendance of dealers was not so great as we have usually observed, but buyers were early in the fair, and commenced purchasing the best descriptions with little delay. The sales, however, were generally heavy; and the prices obtained did not appear to afford satisfaction to the farmers. Business continued very dull throughout the day, and many sheep were driven away unsold. The prices obtained were supposed to be from 7s. to 10s. per head less than last year, and about 2s. per head under those obtained at the late Wilton fair. The following, we believe, will be found a correct statement of prices—Down ewes, 18s. to 30s.; down lambs, 14s. to 30s., some very superior 36s.; wethers, 25s. to 42s. Horse fair: the horse fair is well and numerously supplied with every description of this useful animal; but the attention of most persons at the commencement of the fair being devoted to business in the sheep department, not many sales of horses have yet been effected. The display of cart colts is considered very good, and several purchases have already been made. Hop fair: At the time our account left the Hill (Tuesday evening) the whole of the Hops were then only just brought to the fair, and the number of pockets had not been ascertained. The Rows are well stocked with hops, both Farnham and country. The transactions in this article will not take place before Wednesday, and we cannot state the prices expected to be realized by the planters; but as the quality is so remarkably fine, it is not supposed the figure will be particularly low, as many provident persons will perhaps be inclined to purchase stock for two years consumption, in consequence of the excellence of the article and the probable reasonable price. Cheese: In this part of the fair, we observe about an average quantity of cheese pitched; but at present sufficient dealings have not taken place to justify us in quoting prices.

HEREFORD OCTOBER FAIR.—We do not remember to have ever witnessed so large a number of Hereford cattle in this city, with so *few* inferior animals among them, as we witnessed on Thursday last—nearly every street was crowded with the most splendid description of stock. Nevertheless, we hear on all hands that it was one of the worst fairs that has been held in Hereford for the last twenty years. In the morning, the breeders endeavoured to stop the ebbing of the tide of reduction by holding out for price, but it was soon found that this object could not be gained; therefore, the farmers necessarily gave way, and a large number of cattle exchanged hands, but at a reduction of full 25 per cent. from the prices of last year. Ten two-year-old steers of Mrs. Morris, of Stockton, fetched 23*l*. each; and we have heard of another lot that realized 21*l*. 10s.; beyond them the average price of fat stock was 5¼d. per lb. We did hear of a few fat cows selling as high as 6d., but such sales were very "few and far between." Secondary stock was quite a drug; indeed, we heard an extensive farmer offer to lay a wager that he would buy at least fifty beasts at 4½d. per lb.!—and another farmer assured us that he sold bullocks at fifty shillings per head less than he gave for them in the spring! The supply of sheep was large, but the sale dull at 5¼d. per lb. Fat pigs sold by the hand at from 4d. to 4½d. per lb.; but the number in offer was not very large. Hops realised from 80s. to 90s. per cwt.; the number of pockets weighed up to yesterday (Friday) evening was 246. Salt butter sold at an average of 9s. 6d. per stone of 12lbs., some prime lots at 10s. 6d.; cheese, skim, 32s. 6d.; one meal, 40s. to 42s.; two meal, 48s. to 50s.; best, 56s. to 60s.

ANNUAL SLOE FAIR, October 20.—At this fair very little business is transacted by the farmers; the chief is in the sale of seed wheat, hops, and young cart colts for winter work, &c.; the best samples of white wheat fetched 14*l*. to 15*l*. per head; hops (Sussex) 11d. to 1s. per lb.; Kent, do., 18d. Not so many horses as last year, prices from 20*l*. to 25*l*. for the best.

SALISBURY CHEESE FAIR.—The quantity pitched was small, but the demand was about an average. Old Somersets fetched from 60s. to 70s.; new Somersets, 54s. to 60s.; North Wilts, 44s. to 56s.; Half-Cowards, 44s. to 50s.; and Skims, 17s. to 26s. per cwt.

WORKSOP STOCK FAIR.—This fair was exceedingly well attended both by buyers and sellers of stock. On the whole, we are disposed to think that the value of stock may be considered to have depreciated about twenty per cent. in comparison with the corresponding period of last year, which depreciated price would be about the same figure that stock was selling for about this time seven years ago. We understand that there was a good deal of business done in sheep, although the return for them was not such as to give general satisfaction to the seller. On the whole prices were not lower, but, if anything, rather higher than what stock had sold for in the fairs which have recently been held in the neighbourhood. Good ewes averaged about 28s. to 32s.—one or two lots, of a very superior quality, about 36s. each. Lambs, a brisk sale, from 18s. to 20s. There was a great number of Scotch sheep exhibited, but very hard to dispose of from 8s. to 12s. each. For horned cattle there was little or no demand, and not much business done, but what beasts were disposed of were from 3*l*. to 4*l*. a head less than what the same would have sold for this time last year, although business was flat in consequence of purchasers being rather cautious; still prices were not at such a low ebb as either to discourage the buyer from making his usual purchases at this time of the year, or the seller to dispose of his stock at a ruinous sacrifice of capital.

FALKIRK OCTOBER TRYST. (FROM THE SCOTSMAN.) During last week great quantities of stock were brought up to the neighbourhood of Falkirk for the third and last great market of the season; and early upon Monday last the 10th curt., the Tryst grounds at Stenhouse muir, consisting of eighty imperial acres, were thickly studded with fine flocks of all kinds of sheep. It was allowed to have been the largest sheep market which has yet taken place. We should think there were from 95,000 to 100,000 upon the grounds. At the Tryst there was not such a large proportion of the white-faced Cheviots as were at the September market; but several very large lots of this fine breed appeared to the best advantage. Among them we noticed a lot of 1,500 three-years old wedders which were sold early in the forenoon by Mr. Scott, Hawick, to Mr. Pagan, Liverpool; Mr. Patterson, Caithness, also disposed of several large lots early in the day. White faced wedders fetched, in large lots, from 22s. to 24s. per head; a few very fine cuts of ditto, 26s. Black-faced wedders from 16s. to 21s., average 17s. 6d.; a few of a very superior quality of ditto brought 25s. 6d., crosses from 7s. to 11s. per head. Sixty score of white-faced ewes were sold to a Northumberland dealer for 10*l*. 10s. per score; black-faced ewes from 5s. to 10s. Mr. M'Donald sold about

1,400 of the Gleneves and Benevis black-faced wedders, three-year-old, chiefly for Ayrshire, at 19s. 6d. per head. Messrs. M'Farlane and Mitchell, Invercaddle, sold 1,000 of the same kind at the same price. Messrs. Kennedy, Cameron, and Greig, also disposed of their lots at from 19s. 3d. to 1*l*. 1s. The ewes, both Cheviots and black-faced, were less in demand, and for them it may be said not to be such a good market. Sales, however, went on during the day, and all kinds left the market in great quantities. For the white-faced Cheviots from 10s. to 16s. per head was obtained; a number of the black-faced ewes were sold as low as 4s. 6d. and 5s., others of the best kind fetched 8s. 6d. to 9s., the average about 6s. 6d. to 7s. A number of lots of black-faced one-year tups were brought up for sale; for this kind of stock there seemed but little demand; the best half dozen we noticed were sold by Mr. Foyar, Campsie (who is now famed for rearing the stock), to Mr. Richmond, Perthshire; they brought nearly 3*l*. per head. Mr. Rennie, Kilsyth, had 34 of the same kind; what were sold brought about 31s. Such would be the average price for what were disposed of. Several lots of Highland ponies were also upon the ground. Sales dull. Mr. Robert Carmichael bought a lot of 27 at about 3*l*. each. The day was favourable for showing stock, and the various avenues to the south from the Tryst grounds were quite crowded during the after part of the day with flocks leaving the market: and what was very uncommon at an October Tryst, they were often quite enveloped in clouds of dust.

TUESDAY. Early in the morning the Tryst grounds were thickly covered with a fine stock of black cattle, and numerous heavy lots of the Angus, Fifeshire, and Aberdeenshire breeds. What appeared to us the top lot, belonged to Mr. Leslie, of Goat-milk farm, Fifeshire, consisting of fifteen polled stots, rising four years old. The price asked in the fore part of the day was 19*l*. They were sold early; but the price was not ascertained. Mr. Cairns, Tillicoultry, had a fine lot of muir stots, crosses between the short-horn and Ayrshire breed, rising four years old; sold at 13*l*. 13s. per head. Numerous lots of three-year-olds were disposed of at prices from 9*l*. to 11*l*. A great number of West Highland cattle, from the Isle of Skye and other parts, from two to three years old, were disposed of, at from 3*l*. 5s. to 4*l*. 10s. Small stock from the North Highlands, from 2*l*. to 4*l*. For some time sales were stiff; but when they commenced, large lots left the market in rapid succession, so that prices may be quoted low; stock exchanged hands rapidly. The day was sultry and warm; the immense clouds of dust which rose in the south part of the market obscured the atmosphere and hurt the appearance of stock, continued throughout the day, and the parched animals, after leaving the markets, could not be restrained from rushing into the water-dams at Carron to quench their thirst. So excessive is the drought here, that the dams have sunk about six feet, and in many parts are dry. There was also a large show of excellent draught and other horses. Mr. George Water, Touch-hill Farm, Stirlingshire, had a very superior lot, and effected numerous sales. The best pair we heard of were sold by him. They were four year-old greys of the Clydesdale breed, and brought 71*l*.; a fine three-year old bay also brought 31*l*., and he disposed of another at 30*l*., besides many at inferior prices. From the great number in the market we think much of this kind of stock will stand over until to-morrow. Considering the immense quantity of cattle brought up, the influence of Peel's tariff, and the state of the country, this Tryst has been considered a good market.

BALLINASLOE FAIR.—The following letter reached me this morning:—

"Ballinasloe, Wednesday, Oct. 5.

"I regret to say our fair this day was worse than yesterday's, though some persons were nearly as well off as if they had sold yesterday. As far as I can judge, the primest lots of wethers, and these only, went within a shilling or two of last year's figure; but then the sheep are in better condition. The second class of sheep, and the more inferior still, were purchased, in most instances, at prices no way remunerative—far from it; and, I rather think, were Sir Robert Peel to walk about here, his reception would not be very flattering. Those Connaught graziers who most admire his talents, and whose political principles had been hitherto most in harmony with his, don't evince much zeal in his defence now.

"For the top wethers of the fair (Mr. Taafe's, as usual) Mr. Tuite, M.P., paid per head 2*l*. 14s.

Sold 4th October, 1841	55,131
Sold 5th October, 1842	43,576
This year less sold first day	11,555

"Seven o'clock, Wednesday.

"I have just learned the total number of sheep

Sold this year	62,409
Unsold	12,177
Total exhibited yesterday and to-day .	74,586
"In 1840 the numbers were—	
Sold both days....................	74,080
Unsold	16,680
Total exhibited	90,760
"In 1841 the numbers were—	
Sold both days....................	69,438
Unsold	7,061
Total exhibited..................	76,499

DUBLIN, OCTOBER 8.—BALLINASLOE FAIR—FALL IN THE PRICE OF CATTLE.—The great cattle fair of Ballinasloe took place yesterday, and the operation of the tariff has been felt, cattle having fallen to the extent of from twenty to twenty-five per cent. upon the rates of last year. I understand that the English cattle dealers bought much more sparingly than at any previous fair for many years. The number of cattle remaining unsold is immense. Knowing the great interest excited by this fair, even in England, I shall proceed to give you all the information which has reached me from various correspondents:—

BALLINASLOE, OCT. 7. — The cattle fair was, upon the average, about 2*l*. 10s., or perhaps 3*l*. per head under last year. This is a very serious decline. Sir Robert Peel might have allowed the fall to be more gradual. As it is, matters cannot be much worse; but how are rents to be paid? If the Premier does not make the English manufacturers prosperous and contented, he will have failed most signally, for he has dealt the Irish agriculturists a "heavy blow," with "great discouragement." I send you, as accurately as I can obtain them, the numbers sold and unsold—the latter far beyond last year, but a considerable number is likely to be sold to-morrow:—

Oxen sold	7,283
Unsold	4,161
	11,454
Two years old heifers	124
Total	11,578
In 1840 the numbers were—	
Sold	10,487
Unsold	265
Total in 1840	10,752
In 1841 the numbers were—	
Sold	11,227
Unsold	1,959
Total	13,186

The following is the number of horses that appeared at the present fair:—

Sold	88
Unsold	340
Total	428

NORTH LINCOLNSHIRE AGRICULTURAL ASSOCIATION.—PRESENTATION OF VALUABLE PLATE TO JOHN HETT, ESQ.—On Wednesday a very numerous meeting of this influential society took place at Barton-upon Humber, where prizes for ploughing, hedging, ditching, under-draining, stacking, and thatching, were nobly contended for in fields of Mr. Brankley, on the Horkstow road. About thirty ploughs were entered for competition, and the whole of the work was so excellent, that the judges had great difficulty in deciding. John and Edwin Richardson, of Sturton, near Horncastle, brothers, won the silver cup and silver medal for ploughing by farmers' sons, and 44*l.* were distributed amongst farmers' servants as prizes in the above departments of industry. There were also prizes for corn, seeds, and roots, Fullard's wheat, beans, German marrow-fat tares, and German marrow-fat turnips, won all the prizes for which they contended. About one thousand gentlemen and farmers were present, including Lord Worsley, &c. In the afternoon, a dinner was held at the George, where one hundred and fifty sat down, G. Heneage, Esq., of Hainton, in the chair. Earl Yarborough, president, was prevented from attending, and Lord Worsley from remaining to dine, by the alarming illness of the lady of Capt. Dudley Pelham. The most interesting part of the proceedings was the presentation to Mr. Hett, the indefatigable secretary, of a splendid tureen, a waiter, and tea service, of the united value of above 200*l.* The inscription on the tureen was to this effect:—This tureen, with a tea-service and waiter, is presented to John Hett, Esq., by the North Lincolnshire Agricultural Association and private friends, as a testimonial of their appreciation of his valuable services as Honorary Secretary, October 12th, 1842. The waiter had a handsome scroll border, with antique feet, and was engraved in the Louis Quartoze style, the inscription being—The Gift of the North Lincolnshire Agricultural Association to John Hett, Esq., October 12th, 1842. The faithful discharge of duty is the true basis of honour.

AGRICULTURAL REPORT.

GENERAL AGRICULTURAL REPORT FOR OCTOBER.

This has proved one of the finest months for farm labours, recollected at any corresponding period of the year. In its early part, and up to the 20th, scarcely any rain fell in England, which gave the farmers an excellent opportunity for ploughing the land destined to be sown with autumn wheat; while, in some instances, the process of seeding was much retarded in high situations, in consequence of the soil becoming too dry for that purpose. However, the fine rains which have fallen since the above day, have enabled our wheat growers to proceed rapidly with that operation, and it may, we think, be fairly presumed that at least three-fourths of the winter wheats have been already sown under the most favourable auspices, and no doubt appears to be entertained that a general conclusion will be arrived at in the course of the next fortnight. The plants which have appeared above ground exhibit a very strong and healthy appearance, and we hail the present position of things—*i. e.*, in relation to culture—the harbinger of good crops for the ensuing season. So much time having been occupied in the fields, the flail and thrashing machine have not been in quite so much requisition as on some previous occasions, yet the quantity of wheat, barley, and oats, thrashed out has been sufficiently large to enable us to form something like an adequate opinion of the actual produce of this year's crops. We have all along given our statement to the effect that those of wheat have amounted to nearly, a fair average; and that those of other descriptions of grain have proved great, and now we see no reason whatever to alter that which we have before advanced. Of course, it will be understood that we are speaking in reference to the whole of England, since, otherwise, two or three counties might be pointed out in which a considerable deficiency of supply is found to exist. For instance, in Essex, the yield of wheat is much less than usual; but take England as a whole, we think it will be found about equal to what we have stated. As to the quality of the grain, this is fine in the extreme, which circumstance cannot fail to be of vast importance to ourgrowers.

The early time at which harvest commenced this year having prevented the total exhaustion of the stocks of old grain, samples of it are still to be met with not only at Mark Lane, but also in most of our large country markets, the quality of which is represented as fine, yet we do not consider there is any abundance of it; and that it will be worked off in the ensuing month, appears pretty certain.

Notwithstanding the pressure of the times, we understand the breadth of land under wheat culture this season is much larger on a comparison than was that of last year; and the fortunate circumstance of getting it finished early, and in the best possible condition, render future prospects, in this particular, cheering.

Although the turnip crop this season is large, we find the quality to be unusually inferior, caused, in a great measure, by the dryness of the summer months. As to the other available supplies of winter food for fattening stock, we learn that it is good, with the exception of hay. The epidemic has been again raging to some extent in our grazing districts, yet the losses sustained have not been of any great moment.

The potato crop in the United Kingdom, including the Channel Islands, is represented as great almost beyond recollected precedent, while the fineness of the summer months has caused the quality to be extremely good. The supplies that have come to hand have met a dull sale, in consequence of their abundance and the immense supplies of vegetables on offer, while the prices realized have been very unremunerative.

This has proved a most abundant hop season, both as regards quantity and quality. This abundance has had a serious effect upon prices, both in the Borough and at the provincial fairs and markets. The growth being pretty well ascertained, the duty is freely backed at 160,000*l.*, which sum will, we think, be realized. The official announcement is expected to be made in a few days.

Our advices from Scotland are satisfactory. Most of the autumn wheat has been already sown, while the fine frosty weather has greatly improved the condition of the new grain. Increased supplies of corn have been on sale in the principal markets, while the general demand has ruled heavy, at drooping currencies.

In Ireland, even in its most northern part, harvest has been brought to a close. The abundance of the crops this year leads us to suppose that that will be an exporting, instead of an importing country, during the next season. In the different markets the demand has ruled dull, at lower figures.

We now come to the consideration of that close approximation to free trade principles—Sir Robert Peel's new Tariff. Although it will be perceived on reference to figures, that the actual imports of stock under that measure, have not been so large as many persons have imagined, yet we have this assurance, that the available supplies of beasts throughout Germany, Holland, and Spain, but more especially in the former country, are large in the extreme; in fact, we have the very best authority for stating, that almost any quantity of stock could be obtained thence in a short time. The Premier intimated, in the course of one of his speeches in the Lower House, that our graziers had nothing whatever to fear from competition in the Peninsula, from the impossibility of bringing beasts across the Bay of Biscay; and yet we have received no less than 376 beasts, 76 cows, and 180 sheep, at Southampton, Devonport, and London, from Vigo and Corunna, since the act came into operation. These beasts, which much resemble a cross between the Alderney cow and the buffalo, have been about the best importations, and have produced fair prices, viz., from 16*l.* to 21*l.* each; while their dead weight has been about 24 stones per quarter. The original cost of this stock was about 5*l.* per head. The German beasts are similar to our old Lincoln breeds; but this is easily accounted for by that stock being in the first instance, or about 60 years since, derived from Germany, by our breeders. The cows from Holland being good milkers, have found a ready sale at moderate prices; but the oxen from that quarter have commanded little attention. The total number imported into England under the present measure, up to the 25th, was 2,912 head. However small this may appear in the aggregate, it has produced a very heavy inquiry for each kind of meat throughout the kingdom, and the rates have given way to some extent. We have had large importations of salted meat from America, which has proved of very middling and inferior quality. The prices demanded for that article are 2*l.* 10s. per barrel of 200 lbs. duty paid, or about 3d. per lb. Much stress has been laid upon the extraordinary cheapness of the pork, but we consider it dear at any price, since not only has it been imperfectly cured, but most of it is greatly affected with rust. The arrivals of hams, cheese, poultry, &c. into England have been very large, but they have mostly sold at very low rates. The following is a tabular statement from whence the supplies of stock have been derived:—

FROM GERMANY.

	Beasts.	Cows.	Sheep.	Pigs.
Totals..........	677	233	130	21

FROM HOLLAND.

	Beasts.	Cows.	Sheep.	Pigs.
Totals	446	141	——	608

FROM SPAIN.

	Beasts.	Cows.	Sheep.	Pigs.
Totals	371	64	180	—

The receipts from Germany have arrived at Hull and in the Metropolis, and the same may be said as regards those from Holland; but the principal places of import from Spain have been London, Southampton, and Devonport.

The following is our usual monthly statement of the supplies and prices of fat stock exhibited and sold in Smithfield cattle market. The former have amounted to 12,992 beasts, 110,000 sheep, 940 calves, and 1,132 pigs; while the latter have ranged as follows:—Beef, from 3s. to 4s. 4d.; mutton, 3s. 4d. to 4s. 6d.; veal, 3s. 8d. to 4s. 6d.; and pork, 4s. to 4s. 10d. per 8lbs., to sink the offals.

On each market day, the attendance of dealers has proved rather extensive, yet the demand, for all except the very primest stock, has proved excessively heavy, and the quotations have had a downward tendency. The principal portion of the supplies, as is invariably the case at this season, have been derived from our northern grazing districts, viz., Lincolnshire, Leicestershire, Northamptonshire, and Warwickshire, while the general quality of the stock has proved very inferior. The arrivals from Scotland have been small, viz., about 100 horned and polled Scots, and will doubtless continue so, until quite the spring. Towards the close of the month, very few Foreign beasts were on sale, on account, it was stated, of the very low prices obtained for them—some of the importers having sustained a loss of from 1*l.* to 2*l.* per head, to effect sales.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, Oct. 25, 1841, and Monday, Oct. 24, 1842.

At per 8lbs. to sink the offals.

	Oct. 25, 1841.					Oct. 24, 1842.			
	s.	d.		s.	d.	s.	d.		s.	d.
Coarse & inferior Beasts	3	4	to	3	6 ..	3	0	to	3	2
Second quality do.	3	8		3	10 ..	3	4		3	6
Prime large Oxen......	4	0		4	2 ..	3	8		3	10
Prime Scots, &c.......	4	4		4	6 ..	4	0		4	4
Coarse & inferior Sheep	3	4		3	6 ..	3	0		3	4
Second quality do.	3	8		4	0 .	3	6		3	8
Prime coarse woolled do.	4	2		4	6 .	3	8		3	10
Prime Southdown do..	4	8		4	10 ..	4	0		4	6
Large coarse Calves ..	4	8		4	10 ..	3	8		4	0
Prime small ditto	5	0		5	4 ..	4	2		4	6
Large Hogs...........	4	8		5	0 ..	4	0		4	6
Neat small Porkers ..	5	2		5	4 ..	4	8		5	0

SUPPLIES.

	Oct. 25, 1841.	Oct. 24, 1842.
Beasts............	3,747	3,901
Sheep	23,680	27,330
Calves..............	100	115
Pigs................	603	571

Up to Newgate and Leadenhall markets, immense supplies of slaughtered meat have been received from Scotland, and various parts of England; they having amounted to nearly 11,800 carcases, which have produced a heavy inquiry, and very low currencies have been realized.

CALENDAR OF HORTICULTURE FOR NOVEMBER.

The meteorology of this month, by which all the operations of the garden must be materially governed, can be described in a few lines. November is considered the season of fog and gloom; we prefer to consider it the month of transition—for so beautifully fine has it occasionally proved, and so strongly marked are the alterations, that it cannot be deemed altogether sombre. Fogs are frequent, because the ground generally retains some of the heat of autumn, and the air gradually becomes comparatively cold; but still, temperature is arbitrary, and depends much upon electric action. The Saxons styled November "the windy month." In the years 1819 and 1823, snow storms introduced November, and were followed by keen frost; in 1827, and in one year since—we believe 1834—the first fortnight was sunny and quite oppressively hot. Hoar frosts occur and afford an index for the character of the winter; for if after a clear night and a strong rime the wind veer to south-west and bring rain—and when these transitions occur three or four times at short intervals—the winter is likely to prove mild and showery. The average height of the barometer is about $29\frac{7}{10}$ inches; that of the thermometer 43 or 44 degrees. The lunations of the present month are the following:—new moon, 2nd, 4 h. 8m., afternoon; first quarter, 10th, 1h. 15m., morning; full, 18th, 3h. 29m., morning; last quarter, 25th, 8h. 59m., morning.

KITCHEN GARDEN.

Potato digging is of the first consequence, and a dry condition is material. Every tuber ought to be sheltered before sunset, as a brisk frost sometimes occurs in a few minutes after a sudden clearing of the atmosphere sufficient to destroy the cuticle and produce rapid decay.

We read of autumnal planting as a great improvement; and certain it is, that potatoes left at the time of digging are rarely frozen in the ground. They germinate later, but more luxuriantly, than planted tubers, but they lie deep in the ground, and produce little; whereas, sets taken with two string eyes—planted in good loam six inches deep, covered with stratum of semi-decayed leaves and light free soil—must offer every chance of a crop. The object is to protect from frost and to ward off too much water; therefore we would dig a plot of ground, make the furrows full four inches deep and two feet apart; plant the sets, eyes upward, cover first with screened, leafy compost (not strawy dung); then to the surface level with dry soil; and, finally, lay the ground in a small ridge along every row. The planting should proceed in detail, row by row; and if dry littery straw, or fern, were laid between the ridges, all would be secure, and the first potatoes might come in by mid-May; but the earliest period and finest weather of the month should be chosen.

Sow, directly, early peas; the seed should be thickly sprinkled in drills three inches deep, and these ought, if possible, to range in front of a south wall six feet in advance of it: Mazagan or long pod beans, and some radish; the latter to be covered with litter during hard frost.

Transplant the August cabbages for the second crop, and replace those of the first planting which have failed.

Take up the carrots and beet entirely; store them in a root cellar with sand; also a supply of parsnips, Jerusalem artichoke, and celery. Earth up the last in the dryest weather the month will afford, and almost up to the tops of the leaves.

Dress asparagus beds and rows where not completed, and prepare land, by deep, enriched trenching, for new plants. Artichokes are not so tender as are imagined—a covering of sawdust or ashes about the roots will suffice; but new plants put in every year produce the best heads, and this practice is coming into vogue.

Sea-kale, begin to excite. Wooden troughs are the best and cheapest machinery, surrounded by warm leaves, or leaves and long stable manure. Pots buried in the same do well, but are soon broken. To prepare the plants, remove every decayed leaf and the weeds; lay sandy loam, or sand and sea-weed, over the plot; put a marking stick to each plant, then apply the coverings. This vegetable would be in season comparatively early without heat, were gardeners to raise seedlings and educate them the *first season* to early habits, by covering each so soon as the leaves turned colour, and surrounding the troughs, boxes, or pots with straw at least a yard on every side. The ground retains much warmth at the end of October, and were it secured from frost very early, the natural temperature would stimulate the young kale, and thus induce the habit of speedy growth. Persons do not sufficiently observe and reflect.

The routine of trenching, ridging vacant plots, removing every kind of weed and vegetable remains, sweeping and rolling walks, ought to be attended to; for neatness in a winter garden produces a great relief in this gloomy and declining season.

FRUIT GARDEN.

Prune rigidly the vine, but nothing besides. In the long-rod system of C. Hoare, every upright year-old branch is cut quite away to a prepared succession branch of this year's wood. Assuredly the white sweetwater and the muscadine bear finer clusters on new rods—provided these be trained from two feet to a yard asunder, so as to permit the fruitful shoots to advance freely on each side in the open spaces; but it is questionable whether the black grapes do not quite as well on spurred, older rods. Turner's hardy vine and the real black cluster are the most certain bearers; but the present year has given us very good black Hamburgh in the exposed S. by E. wall.

Figs should be trained well and close to the wall, and then be matted, or the branches interlaced with spray of the spruce fir.

Peach and nectarine trees ought to be left to have free play, by loosening the bearing wood; it is useless to prune now.

Plums, cherries, and apricots can be trained in regular order, and be either divested of superfluous old wood, or left till February.

VINERY.

The latest grapes being cut, the vines can be exposed with some advantage to the weather; and much benefit will accrue to those which are planted within the house, by the wetting that the ground receives from rain. This remark will apply chiefly to very dry houses erected over gravelly or chalk subsoils; but damp, cold sites are an exclusion to the above treatment.

The early vinery and grape stove ought to be closed prior to the forcing, which will soon commence. Many strip off the rough bark, and scrape the wood. Can they assign any philosophical reason for such unnatural treatment? The vines have a pretty appearance when thus curried, but the gardener may rest assured that he does not thus prevent the attack of a single *acarus* (old spider.)

The pine stove of spring and summer fruiters ought yet to remain cool, and the plants dry, to give an effectual check—that is, in all those cases where a general fruiting is required; but in others, where it is indifferent how and when a plant may show and ripen fruit, it is better to maintain the warm growing temperature; for then, and then only, can a pine produce its best and largest fruit.

The succession plants must be kept at a strong growing heat, for to them a check is immediately fatal.

ORNAMENTAL DEPARTMENT.

Now trim the shrubs which were left in October; fork over the ground, and permit all the falling leaves to lie upon the rough surface. Disturb no roots, and cut nothing down; but protect, by leafy mulch, all the ornamental shrubs. Azalia beds, and plantations of all the American tribes, should be cleared of weeds, and covered with an inch or two of leaf mould mixed with sand. Take up the dahlias that still remain; but few are now in the ground we imagine, the frost of the 20th of October having totally destroyed the herbage. Each root should be effectually dried, then picked clean from the earth and deposited in a dry cellar.

Bulbs—plant before the 10th all the tulips, hyacinths, narcissus, and some anemones in prepared beds of loam, river sand, and decayed vegetable mould, adding a little salt at the time of digging; fill all the holes with sand.

Hyacinths in pots should be deeply covered with sand, and kept so till they have grown some length; when brought to light they will speedily obtain colour.

Greenhouse—ventilate freely, and cover well in cold nights; coverings are better than fires. Remove dead leaves, and reduce water to a minimum. Fire is of use to the higher order of pelargoniums, which ought to have a house to themselves, where free air and a temperature of 45 to 50 degrees can be maintained.

Stove plants require heat at 55° as an average, with little water and some air; cleanness is essential, and the habits of each must be studied.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF OCTOBER.

Since our October report of the actual state and prospects of the corn trade, in the wheat markets generally there has been displayed very little activity, and in prices still less variation has occurred. Of the last crop our farmers have as yet delivered rather sparingly, no temptation having been placed before them to send their property liberally into consumption. Besides this fact, the weather has been exceedingly favourable for field operations, and, with that foresight for which the cultivators of the soil are so much celebrated, their nearly undivided attention has been, during the month which has now been brought to its conclusion, almost exclusively directed to out-door labours. The consequences have been very satisfactory, for nearly all the winter seed wheats have been already got into the ground under the most favourable circumstances, and every possible preparation for future field operations in the spring has been effected. We have now had four current years of adverse weather for the crops in this country, and in this circumstance alone, can the distress, now so generally pervading all ranks in our society, have its origin. There still exists, however, a saying of former days, that weather is a most accurate paymaster; and, if this observation be founded on any thing like truth, from the beautiful weather which we have enjoyed during the winter seed wheat sowing season, we have strong reason to predicate a most abundant produce of wheat, when the next crop arrives at maturity. Should, fortunately, our present prospects be then rendered real, abundant evidence will be thereby placed before the cotton lords, and the members of the anti-corn league society themselves, that the prosperity of all, and particularly of the manufacturing and commercial classes, rests mainly on the production at home in abundance of all the necessaries of life. Then, indeed, do increased wages arise from moderation in the prices of food, for this is the legitimate and natural consequence of the production of abundance at home. The real wealth of nations will soon we trust, under such an event, be illustrated here in a productively employed population, and the money paid to the agricultural interests for provisions will be kept in circulation at home, and will amply reward the labours of the industriously disposed members of society. Under such circumstances it will not be necessary, for one year at all events, to hire foreign fields, and to pay wages to foreign agricultural labourers for producing wheat for the consumption of the people of the United Kingdom. During the last four or five years we have paid to Europe and to America upwards of thirty millions sterling in exchange for grain and flour, and during the same period our shipments of manufactures to those foreign nations, from whom we have imported grain so largely, have been annually on the decline, thereby most clearly establishing the fact that our foreign export trade has no connection whatever with even an abundant importation of foreign food. Indeed the more largely we import and pay for foreign grain, the less is the demand for the consumption of our own manufactures amongst foreign agricultural nations, for the money which we send to them for food is very naturally, and very patriotically too, embarked in improvements in their own neighbourhoods. They invest this British money in extending manufactures in their own vicinities, and in producing larger crops of grain for the purpose of the future extraction of larger sums of money from the British nation. It is a matter of much surprise to us, we must freely confess, that parliamentary measures are not adopted for the correction of this system, so exceedingly injurious to the British agricultural interest, and certainly not less so to the manufacturing and commercial labourers; for what renders their distress at the present moment so extensive, but the increased means, which our liberality gives to foreign nations, to supply themselves with goods manufactured at home, added to the decreased means, which the same system occasions amongst British land proprietors and their tenantry, for the consumption of manufactured goods? It never can be advantageous to any nation to employ others to perform that work which can be done effectively and profitably at home, and yet enlightened England at present not only transfers a considerable quantity of productive agricultural labour from her own people to those of foreign nations, but actually furnishes foreign manufacturers with the means of competing with those of Great Britain, not only in foreign markets, but even in our own. That we have the means of abundantly feeding three times our present population is placed beyond all doubt, but if any confirmation of this truth be requisite at the present day, we need only refer to those seasons when we have had fair and average crops of grain. Then the late corn law restricted the importation of foreign grain and flour, and then the people were abundantly employed, at most excellent wages. The contrast of unfavourable corn seasons, however, is most painful. The consequences of the late large importations of foreign grain and exportation of money, rendered necessary by the elements, have been most injurious to all classes in the community. The want of markets for the consumption of British goods, has necessarily created a deficiency in productive labour, and its consequent reductions in wages. The only corrective for these evils is an abundant growth of grain at home, and the next crop we trust will produce this change. So far as the operations in the fields have progressed, they have been eminently favourable ; and it is, we repeat, fair to infer that as weather is a good paymaster, a part of the debt now due in this quarter will this corn season be repaid. In the meantime the farmers have been better occupied than in forwarding their wheat of the last crop to market. The deficiency in supply from this cause has however, as yet, been amply made good by wheats of foreign growth, and prices have by these means been rendered more moderate than they otherwise probably would have been. But this source of supply must, about the close of this year, be in a material measure exhausted, for the foreign wheats now in this country can furnish no adequate substitute for the well ascertained deficiency, which at the present time unfortunately exists in the quantity of old wheat of home growth now remaining in the possession of British farmers and corn merchants. Of this description certainly not one tithe of the quantity which in favourable times does remain unconsumed at this period of the year, is now to be found within the United Kingdom ; and this fact must, after the turn of the year, in a certain degree at all events, influence the prices of wheat, so soon as the pressure of foreign wheat on the great markets of consumption becomes less onerous than it has been since our last publication. However brilliant, therefore, the prospects of the coming wheat crop may be, during the spring and summer months, it is more than probable that a gradual improvement in the value of the finest qualities of that article will take place, until the result of the next harvest can be accurately ascertained. Indeed this event at the present time is most confidently calculated on by our farmers and by all corn merchants throughout the United Kingdom, and therefore no wheat is forwarded to the markets for sale at present, unless it be by those whose pecuniary circumstances render a sacrifice of their property necessary to the upholding of their credit, or to the payment of their immediate farming expenditure. Although, however, there exists a strong probability that the farmers in a few months hence may receive prices for their wheats more remunerating than the present rates are, still we may also venture to say that in the course of nature, two or three favourable seasons must succeed the late unfavourable ones, from the effect of which the people are at present suffering so severely, and pave the way for those improvements in agriculture at home, which eventually must not only render foreign supplies of food unnecessary, but also enable the landed interest to feed abundantly more than triple our present population. During the last thirty years, no doubt great improvements have been effected in the science of agriculture, and from each acre the produce received now is very much larger than it was at the period to which we have now alluded. Still, however, as agricultural science progresses, and as agricultural capital increases, similar, and even more extensive improvements in tillage may be confidently looked for. The fields which are now considered to be in the highest state of cultivation may yield crops, before another quarter of a century can pass away, much larger than the farming art can at present extract from them ; and under fair protection being extended by the law to money, industry, and skill, when embarked in the pursuits of agriculture, many millions of acres of land, now entirely unproductive and useless to mankind, will be drawn, we may say, from the wilderness itself, and rendered subservient to the wants of the British people. Any benefits—and it is far from our wish or intention to depreciate their high importance—which, under any circumstances, can be conferred on the community, either by commerce or by manufactures, sink into insignificance when compared with those which agriculture confers universally on the human race ; and to sacrifice advantages of such inestimable worth to the theories of a false philosophy, would be an act of national suicide. To direct the public attention rather to the cultivation of the fields than to commercial pursuits, would add to the solid happiness of the inhabitants of the United Kingdom, and would improve the public health by the future transfer of thousands of labourers from abject labour of furnaces to the pleasant and healthful toil of the fields. Surely with so many open channels for the profitable employment of the people, there must be something wrong in our internal policy, else so much distress as now exists could not be found in this country. In Ireland, for instance, field work may, at the present moment, be found for a much more numerous population than she now possesses, if only due encouragement were held out for the cultivation of the banks of her rivers and lakes ; and from the drainage of her morasses, also great and important benefits may be obtained. On the borders of Norfolk and of Lincolnshire, capital and science may likewise draw from the waters the new county of Victoria, which may give food and clothing to many thousands now destitute. The prosperity of agriculture must eventually be attended by most important consequences to all the industrious classes within the British empire, and yet, whenever any unfavourable circumstance occurs in society, the agricultural interest is universally called on to remedy the evil. Our manufacturers for several years now, for instance, have produced more than the markets, either inland or foreign, can consume, and the anti-corn law leaguers demand the property of the agriculturist to replace the losses which they have incurred by their unfortunate speculations. They require a reduction in the value of agricultural produce, in order that they may make money by the reduction of the wages of the manufacturing labourers ; but amongst the productive classes their objects and principles are now too well known to be trusted. Commercial workmen are now too well informed not to know that the value of food must eventually regulate the value of wages, and, therefore, during the late unfortunate disturbances in the manufacturing districts, not one solitary complaint has been heard amongst them against the prices of British agricultural produce. In all country towns and villages, land proprietors and farmers are the principal consumers of manufactured goods, and when, by the depression in the value of agricultural produce, the landed interest is unable to expend so largely in those markets, as under more favourable circumstances they generally do, the decreased consumption of goods in the home market is then found to be detrimental to all classes employed in manufacturing pursuits. However materially the expense of living, therefore, may be, and at the present time actually is, reduced by importations of foreign food, still the artizans and productive classes in all the manufacturing districts are perfectly aware that to remit money to foreigners in payment for foreign food, is to abstract from their own countrymen the means for enlarging the different channels from which they derive their wages, and therefore they generally repudiate those Utopian principles which would transfer to foreign nations any productive employment which can be profitably performed in this country, and throw by so doing many thousands of our labourers at home entirely out of employment. As matters therefore are at present, only those who possess fixed incomes can, in any manner, be benefited by the great decline which has latterly occurred in the value of British agricultural produce, occasioned solely by large quantities of foreign produce, which have been paid for in the precious metals, having been pressed on all our large markets for sale. As, however, the season for the importation of wheat from abroad has now been brought to its conclusion, and as, even under the most favourable circumstances, foreign supplies cannot be received to any extent before the latter part of next summer and during the autumnal months, hopes may be, and confidently are, entertained that commerce and manufactures, during the spring months, will receive a favourable spur from the improved demand which must previously arise for British agricultural produce. A great quantity of foreign free wheat has already gone into consumption, and as the demand at present for this description of wheat takes away from the London granaries alone from twenty to thirty thousand quarters weekly, towards the turn of the year the stocks of foreign wheat throughout the United Kingdom must be so materially reduced, as to leave the market open for a much larger consumption of home-grown wheats than has latterly been experienced, and consequently our farmers have just grounds to calculate on receiving prices for their wheats hereafter more remunerating than they have heretofore done, for at present the average prices of wheat are lower than, in the existing state of the agricultural interest, it can be grown for. But as free foreign wheats are now rapidly going into consumption, and cannot be materially increased this season, expectations are naturally entertained that, in the course of two or three months at most, an impulse will be given to British agriculture which will benefit all.

From the United States of America, the letters received since our last publication are dated in Boston on the 15th of last month, and from the other seaport towns in the Union the advices are of corresponding dates. In all of them the corn and flour trades were in an unusually depressed state, the only export demand of any consequence having then been made for the consumption of our West India colonies, which continued to present favourable markets for the sale of the surplus supplies delivered at those periods in all the American markets. It strikes us as being very extraordinary, that our colonies should be now open for the consumption of American agricultural produce at almost nominal rates of duties, whilst the Canadas abound with the same descriptions of produce, and whilst the American legislature, so far from hearkening to the doctrines of reciprocity in commerce, has nearly doubled the heavy duties previously imposed on the importation into that Republic of all descriptions of goods of British manufacture. With these advantages, however, the advices now received from Boston are by no means very cheering to the American agriculturist. Although grain of the last most abundant crop had not then been forwarded to market in very large quantities, still the greatest depression in the corn trade continued to prevail everywhere, and the value both of wheat and flour was gradually on the decline. In several places flour, branded superfine, had been sold at about 4 dollars per barrel; and if it can be afforded by the growers at a price a little under the above quotation, as we doubt not it can be, our maximum import duty of 20s. per qr. on foreign wheat will not prohibit the admission of American flour into consumption throughout the United Kingdom, unless the value of grain produced at home fall to ruinously low prices indeed. Mr. Webster, when in this country, availed himself of every public opportunity to impress on the inhabitants of the United Kingdom, the high benefits which we would receive from his countrymen by taking their agricultural produce in exchange for our manufactured goods. In a great measure the Americans have obtained that part of Mr. Webster's suggestions which is favourable to themselves, for which they have not, however, given to us equivalent advantages. For the sake of the American revenue, and for the encouragement of their home manufactures, on the contrary, they have increased their Custom-house charges on all articles imported from Great Britain, to almost prohibitory rates, and to add to their internal riches, they have repudiated the vast sums of money, for which they are indebted to British capitalists. We venture to predict, however, that Jonathan will not increase his revenue by his late financial arrangements. In this country we feel at present all the injurious consequences of excessive duties. They are the great patrons of the smugglers, and so long as they exist in America, British goods will be sent into all the American States, duty free, in far greater abundance than they would have been had a reduction in the American tariff been adopted instead of the addition made in it, to which we have alluded above. By the experience of our lately passed corn laws for a year or two, we greatly fear that, when it may be far too late, our statesmen will discover that due protection has not been given to our agricultural interest, and that all classes in our society will then be suffering from this great neglect of the greatest interest in the British Empire, on the part of the British Government. But it is not in grain alone that our farmers and land proprietors have been subjected to loss by our inter-national arrangements with foreign nations. The American agriculturists are making most extensive arrangements for forwarding to our markets large supplies of cured provisions of every description; and our cattle breeders and feeders have taken the alarm since our last report, in a greater degree than circumstances at present warrant; for it will require three or four years to increase the live stock abroad to that extent which may render its admission here formidable to that department of British agriculture. The fall in value which this alarm, and different other circumstances have created, has however caused a loss to the home feeders and breeders of from two to three millions sterling already, and to this extent, at all events, are their means for productively employing the industrious classes at home farther diminished. With the United States of America however, we shall most undoubtedly have a very large trade in cured provisions, after two or three years shall have passed away; and this trade annually must increase, unless much greater protection be extended to our home growers of swine and cattle, than our existing tariff of duties extends to them at the present time.

From the Black and Mediterranean Seas, and from the different grain markets in the South of Europe, the intelligence received is in due course of post. The information respecting the state of the corn trade, communicated in the letters from all of them, is much of the same description. Every where the corn trade was described as being exceedingly inanimate, and in several of the export markets the value of bonded wheat was entirely nominal. The season is now too late for shipments of grain being made either from the Black Sea or from the Mediterranean. Long voyages and stormy weather universally prohibit shipments, unless when our markets here are much more favourable than they are at present. Without the Mediterranean, the Southern States have never much grain to spare, even under the most favourable circumstances occurring in our markets; but at present wheat is scarcely worth the expense of transporting it to the Spanish ports of shipment from the interior. In the North of Spain, however, the tillage of the fields will be immediately changed to pasturage and swine feeding. The cattle there, with a little attention, may be rendered equal in quality to those produced in the United Kingdom, and the superior means possessed by the Spaniards for pig-feeding, render their cured pork and hams of far superior quality to any which we can produce at home. At much lower prices, therefore, than cattle can be grown for here, and with much superior quality in their pork and hams, a large trade must eventually be established with Spain in the provision department of commerce.

The information received from the different ports of shipment within the Baltic Sea has not been very interesting to those engaged here, either in agricultural pursuits or in the corn trade, since our last publication. The letters from Dantzic, Stettin, and the other large exporting corn markets, are in due course of post. In all of them wheat was, at those dates, nearly unsaleable, although the stocks were extremely small, and the season was rapidly then drawing to its conclusion. The late wheat trade was, till nearly its close, a brilliant one to the German and Polish corn merchants, but a vast amount of dishonoured bills having latterly been returned on them, their profits have not been, in the event, so large as they had previously expected that they would have been. The prices paid in the Baltic for wheat, during the whole of the last season, were thirty to forty per cent. too dear, and heavy failures in the trade have been the necessary consequences. No business can now be done in any of these places for immediate shipment, for the navigation must soon be closed until the next corn season arrives. The prices, according to the latest advices, had undergone a very material depreciation everywhere. At Dantzic the best high-mixed Polish wheats were quoted as low as 36s. 6d. per quarter free on board, when the shipping season again makes its appearance, and they will during the winter and spring months be still lower, unless our prices in Mark Lane undergo a considerable improvement in the meantime. During the ensuing autumnal months, when the elements again permit the resumption of our grain trade with the Baltic wheat markets, we are strongly persuaded that even the highest duties which our corn laws now permit to be charged on foreign wheat will not at that period prohibit its importation. When the average value of British wheat is 50s. per quarter, the best Polish wheats are worth 56s., at least, in Mark Lane. To deduct from this latter price the duty of 20s. and the charges of importation, say 5s. per quarter, the prices in Dantzic may be then reduced in proportion, for the value of wheat in Mark Lane is the pivot round which the prices of wheat in all the foreign corn markets in Europe and America in connection with Great Britain we may say universally revolve. No quantity, however, in any manner calculated to influence the value of wheat, or to prevent an improvement in prices here during the spring and summer months, can by any possibility arrive in Great Britain from the Baltic Sea or from the ports of shipment in the north of Europe during that period, although the supplies from these parts during the autumn may again be large and detrimental to the best interests of the British Empire, for the maximum duties now chargeable on every description of foreign grain, we repeat, are not high enough effectually to protect the property of British and of Irish agriculturists, and of commerce and manufactures at home.

The maltsters do not commence their operations this season with much spirit, and the demand for barley has continued dull during the month of October. The supplies have, but not in any material degree, exceeded the consumption, and depressed markets have been the natural consequence. This article has been annually falling under its intrinsic value, and the consumption is likewise annually becoming more limited. The deficiency exhibited in the revenue for the financial quarter, which was concluded in the beginning of last month, chiefly originates in the excise department, and the Chancellor of the Exchequer must turn his attention to this fact before prosperity can in any manner be restored in the collection of the public income. During the last session of Parliament a great alteration was made in our custom-house duties, which, in as far as we have had experience in its workings, is as eminently favourable to the industry of foreign nations as, we greatly fear, it must eventually be found to be injurious to our internal prosperity. It is at present perfectly understood that, amongst farther intended reductions on the duties at present levied on various articles of foreign production, the present import charge on foreign spirits holds the first place. Now if duty was collected on each gallon of foreign spirits at present consumed in England, there might exist some reason for the proposed reduction; but as it is notorious that duty is not paid on one tenth part of the foreign spirits, which are in general use under the present system, other means than those now proposed must be adopted for the suppression of smuggling, else it must annually continue to increase until it supersede entirely the consumption of British spirits in England. The duty now charged in England on home-made spirits is upwards of three hundred per cent. on their original value; and it is from this state of the law that a great loss of revenue takes its rise. In Scotland and in Ireland the home-made spirit duties are moderate, and on this account, neither internal nor foreign smuggling of spirits exists there, whilst in England public morality severely suffers by this illegal trade. Heavy duties can neither tend to diminish the consumption of spirits generally throughout the United Kingdom, nor do they tend to improve the public revenue, for the deficiency in quantity manufactured at home, which heavy duties occasion, is most bountifully made good by smuggled foreign spirits, of the worst qualities too, from which no duty whatever is gathered into the public treasury. Thus the public revenue, as well as the public morality, suffers by the existing state of the excise laws, affecting the operations of our distillers at home. It is truly astonishing that a system so extremely injurious to the best interests of the community should be persevered in, when the remedy for the evil is so exceedingly obvious. To reduce the home-made spirit duty in England to 5s. per proof gallon, and to raise the duties now charged in Scotland and in Ireland to the same charge, would, in a few years, entirely suppress the trade of the spirit smuggler throughout the British empire, would considerably enlarge the public revenue, would cause an increased demand for upwards of half a million of quarters of British-grown barley, would improve the public health, by the substitution of pure and wholesome home spirits for the deleterious foreign spirits at present by far too much in use; and all the immorality which smuggling universally generates will finally be removed by the same cause. The excise laws likewise, in as far as they press on the operations of the trade of the rectifier, should undergo a considerable modification. The inhabitants of the United Kingdom are permitted to consume foreign and colonial spirits and home-made whiskey at any strengths which suit the palate of the consumer and the pocket of the spirit-merchant; but the rectifier is not allowed by the excise laws to send his rectified spirits into use until they be reduced to somewhere about twenty under-proof—until, in fact, they be rendered weaker than Irish punch. Under such a law, our rectifiers have not fair play given to them; for it is not easy for them, under these restrictions, to compete in flavour with Dutch, Geneva, and French brandies, although in wholesomeness undoubtedly they considerably excel them. If the law only gave permission, the distillers and rectifiers of the United Kidgdom would speedily supersede the taste now too generally prevailing for French brandies and Dutch gin, and would retain within the country considerable sums of money now annually remitted abroad in payment for foreign spirits. If, however, the laws which regulate the trade of the rectifier and distiller require amendment, those which are in force, we may well say, against the trade of the maltster in a far greater degree demand the interference of the legislature. Here excessive excise charges, and unnecessary excise restrictions, militate decidedly against the objects, for the attainment of which they were enacted. When the malt duty was 34s. 10d. per qr., yet even in paper money three millions sterling were never paid in one year into the treasury from this source of revenue. The minister of the day saw the injury, and had courage to apply to it the only existing remedy. They reduced the malt duty to 20s. per qr., and two years afterwards upwards of six millions of quarters of barley were legally converted into malt, and nearly as many millions sterling were paid into the treasury, drawn from this article alone. Three or four years ago, ten per cent. was added generally to all taxes, and the consequence has been a gradually declining revenue. In no article has this decline been more visible than in that of malt, for at present the quantity used by the licensed victuallers has been reduced by more than one-third of its previous amount. The slightest reflection on the smallness of the quantity now consumed is alone necessary fully to establish the fact that the high duty is the cause of the falling away in the quantity of malt at present consumed by the people. To reduce the duty to 1s. per bushel would in a few short years materially increase the amount now paid into the treasury from the article of malt, and would triple the quantity of it now consumed. This would be a most important boon given to the people generally, and would vastly increase the public wealth. It would open a profitable channel for the consumption of at least three times the quantity of barley now in use by the maltster, for the production of which from one to two millions of acres of sandy soil, at present entirely useless, unless for the growth of rabbits, would be requisite, and the wealth arising from the cultivation thereof would do much more than pay for the additional expense of the additional consumption of beer. From June to the beginning of October, the duty levied on the entry for home consumption of foreign wheat alone exceeded one million sterling, on receiving not one farthing of which did Sir Robert Peel, in his financial statement, calculate, making his means equal to the public expenditure from other sources of taxation. As the agricultural interest chiefly has suffered by the importation of this great quantity of foreign wheat, and as the revenue has been provided for otherwise, according to the last financial statement of the first Lord of the Treasury, it is but fair that the duties collected on foreign agricultural produce of every description should be applied to British agricultural purposes, and this cannot be more beneficially done than in the reduction of the malt duties to the extent, at all events, of the revenue obtained from foreign grain. This would justify an immediate reduction in the malt duty of 5s. per qr., and the whole community, as well as the cultivators of barley, would be benefited by an alteration of this description. Although it would not create so large an additional consumption of malt as the charge of 1s. per bushel for duty would do, still it would be the introduction of a most important new system of finance, and a year or two of its practice would, in a most satisfactory manner, show that moderate duties are universally more favourable to the revenue than heavy ones by any possibility can be, and this malt duty reduction, small though it appears to be, would inevitably soon lead to a duty of 1s. per bushel, as being more in favour of the revenue than any higher charge can be. If the malt duty was reduced to moderation, the beer mixing system, which is now daily practised by the retail dealers in beer, would soon be discontinued, because it would be unprofitable, and the people would then enjoy the genuine extract of Sir John Barleycorn. The revenue likewise would enjoy an addition of from one to two millions sterling annually to the sum received under the present system of exorbitant duties, levied too on an article of agricultural produce, which, when manufactured, pays little short of one quarter of the public expenditure. A thorough change in the malt and home spirit trades is absolutely necessary to the public prosperity.

During the last month the supplies of oats have been about equal to the consumption, and the variations in the value of this article have been very trifling. The quantity of Foreign oats entered for home consumption, during the last three months, and the general superiority of their quality, are the chief reasons for the existing dulness. The last crop of this article, however, both in Ireland and in Scotland, is of a very superior description, and when the farmers send their produce more liberally to market than they heretofore have been enabled to do, the prices abroad of Foreign oats must decline materially before the importer will be able to compete either in prices or in quality with our home growers. Before the late alteration in our corn laws was effected, no complaints whatever were made by the consumers against the value of this article, and the oat farmers were only moderately remunerated for their oats by the current prices; it was therefore quite unnecessary, in as far as oats were concerned, to make any alteration in the duties imposed on those of Foreign growth, for out of it not one benefit can arise to any excepting to the Foreign producer of them. On the contrary it may, and probably will, be attended by consequences injurious to Irish agriculture in particular, in as far as it materially withdraws the encouragement which the previous corn laws held out to the cultivation of oats in the many uncultivated districts of that valuable portion of the United Kingdom. To all places between Falmouth and the Firth of Forth, the freights of oats from Ireland are at least double those charged from the opposite ports in the German Ocean, and we are persuaded that our maximum Foreign oat duty can, under no circumstances, prevent the consumption of the best qualities of Foreign oats in all our markets on the eastern coast; this circumstance must in future very considerably interfere with the investment of capital in agricultural improvements in the Sister Island, and it is the more to be regretted that the alteration in the oat duties has occurred, in as far as it takes profitable employment from the Irish people, and transfers it to those Foreigners whose governments have so lately, by their tariffs, imposed almost prohibitory duties on the importation of British products and manufactures into their different countries. The value of oats is operated on materially by these circumstances at the present moment, nor is there any reason to expect any improvement in prices, unless some alterations be made in our Custom House charges by the legislature, more favourable to British and Irish interests than our present duties are; for an average of 18s. per quarter is considerably below the price at which they can be grown, either in Great Britain or in Ireland, although in the North of Europe that price will most amply remunerate the Foreign land proprietors, and the serfs by whom the fields are cultivated. The best brew oats, when our average price is about 18s., are worth 25s. per qr. at least, and the freight in the season being certainly not more than 1s. 3d. per qr., the highest duty chargeable here can never be any preventive to their importation into this country, for prices abroad will eventually conform themselves to that standard of value which the prices to be obtained in Mark Lane universally regulate and command.

CURRENCY PER IMP. MEASURE.

OCT. 24.

	Per Qr.			Per Qr.	
WHEAT, Essex and Kent, red	46	52	White 50	54	58
Irish	46	48	Do.	48	52
Old, red	—	—	Do.	—	—
RYE, old	34	36	New	36	38
BARLEY, Grinding 27 29 Malting	30	32	Chevalier	32	35
Irish	23	25	Bere .20	21	24
MALT, Suffolk and Norfolk	56	62	Brown	50	54
Kingston and Ware	56	62	Chevalier	63	—
OATS, Yorksh. & Lincolnsh., feed	23	24	Potato	25	26
Youghall and Cork black	17	18	Cork, white	19	20
Dublin	17	18	Westport	19	—
Waterford, white	18	19	Black	17	18
Newry	21	—			
Galway	12	15			
Scotch feed	22	—	Potato	24	--
Clonmel	19	20	Limerick18	19	21
Londonderry	19	—	Sligo	18	19
BEANS, Tick, new	30	33	Old ..34	36	—
PEAS, Grey	35	37	Maple	—	33
White	30	34	Boilers	32	37
SEED, Rape	—l.	—l.	Irish	—l.	—l. per last.
Linseed, Baltic	40	46	Odessa	48	
English Red Clover	—	— per cwt.			
White	—				
Mustard, White	17	19	brown	11	13 per bush.
Tares, old	28	30	new	36	44 per qr.
FLOUR, Town-made	47		Suffolk	38	40 pr sk. of 280 lbs
Stockton and Norfolk,	38	40			

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	—	—			
Hamburg	—	—			
Rostock	—	—			
BARLEY	20	—			
OATS, Brew	15	17	Feed	14	16
BEANS	20	26			
PEAS	23	27			
FLOUR, American, per brl.	22	24	Baltic	22	—

IMPERIAL AVERAGES.

Week ending	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
10th	51	6	27	2	18	6	29	4	33	5	33	6
17th	52	8	27	2	17	8	29	10	32	10	32	11
24th	54	0	27	10	18	4	29	10	33	0	33	3
Oct. 1st	53	2	28	5	18	6	31	0	33	4	33	7
Oct. 8th	51	6	28	8	18	6	30	0	33	0	33	10
15th	51	1	28	10	18	0	31	7	32	4	33	3
Aggregate average of the six weeks which regulate the duty	52	4	28	0	18	3	30	3	33	0	33	5
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	18	0	9	0	8	0	10	6	9	6	9	6
Do. on grain from British possessions out of Europe	5	0	2	6	2	0	2	6	1	0	1	0

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, Oct. 21st, 1842.	s.	d.	AVERAGES from the corresponding Gazette in the last year, Friday, October 22nd, 1841.	s.	d.
WHEAT	51	1	WHEAT	63	6
BARLEY	28	10	BARLEY	31	5
OATS	18	0	OATS	21	9
RYE	31	7	RYE	35	0
BEANS	32	4	BEANS	37	11
PEAS	33	3	PEAS	39	7

PRICES OF SEEDS.

OCT. 24.

The transactions in the Seed market were not important, but there was no disposition to give way in prices, and the retail business done was at about the terms of Monday last.

The season for the sowing of Tares being now over, quotations of this article can only be regarded as nominal.

Linseed, English, sowing	48	56			
Baltic	—	—	crushing	42	45 per qr.
Mediter. & Odessa	45	46			

Rye Grass, English......	30	42	Scotch	18	40
Tares, winter	—	—	New..	5s 0d	6s 0d
Canary, new...............	63	66	fine	71	73
Carraway, old	—	—	new	42	44
Coriander................	10	16	old....	16	18 per cwt.
Mustard, brown, new ..	10	11	white..	10	10s 6d p. bush.
Trefoil, new..............	18	22	old....	12	16
Rapeseed, English new..	31*l*.	33*l*.			
Linseed Cakes, English..	10*l*. to 10*l*. 10s.				
Do. Foreign..	7*l*. to 7*l*. 10s.				
Rapeseed Cakes........	5*l*. 5s. to 6*l*. 0s.				

PRICES OF HOPS.

BOROUGH, MONDAY, Oct. 24.

Very little increase of business is expected to take place until the official duty comes out, which will be about the middle of next month, if not sooner. The duty is still backed at 160,000*l*., though some will not back higher than 155,000*l*. The prices are merely nominal, and likely to go lower before parties come forward to purchase. The supplies continue to be very large.

POTATO MARKET.

SOUTHWARK WATERSIDE, OCT. 24.

The large supply of Potatoes to the Waterside, as reported in our last, has been succeeded by another liberal supply during the past week, viz., from Yorkshire, 1180; Scotland, 1070; Devonshire, 605; Kent and Essex, 540; Jersey and Guernsey, 595; St. Malo, 80 tons—Total 4070 tons. The abundance of green vegetation, and an extensive supply of Potatoes from all quarters, have caused prices to give way; still sales have been very dull at the annexed quotations.

York Reds	60s.	per ton.
Scotch ditto	50s. to 55s.	"
Devons	50s. to 55s.	"
Kent and Essex Whites	40s. to 45s.	"
Jersey ditto	35s. to 40s.	"
Jersey and Guernsey Blues............	45s.	"
Foreign Whites (St. Malo)	35s.	"
Yorkshire Prince Regents	50s.	"

WOOL MARKETS.

BRITISH.

OCT. 24.

Down Ewes and Wethers........	10d. to 10½d.
Down Teggs	11d. to 12d.
Half-bred Wethers	10d. to 11d.
Half-bred Hogs	12d. to 12½d.
Flannel Wool	8½d. to 12d.
Blanket Wool....................	5d. to 7½d.

LIVERPOOL, Oct. 22.

SCOTCH.—There continues still to be a very limited demand for Laid Highland wool, at late rates. A good part of our late arrivals have been for forwarding into the country, so that our stocks are by no means heavy. White Highland is still in moderate request. We have only to report a few transactions in Crossed and Cheviots at late rates.

	s.	d.		s.	d.
Laid Highland Wool, per 24 lbs..	6	9	to	7	0
White do. do.............	9	9		10	3
Laid Crossed do.. unwashed..	7	9		8	3
Do. washed do..............	8	6		9	6
Do. Cheviot unwashed do.	8	0		10	6
Do. washed	12	0		14	6
White Cheviot, washed	19	0		22	0

FOREIGN.

CITY, Oct. 24.—Wool of all descriptions is reported as being firmer, and the quantity on hand in the manufacturing districts is decreasing. The imports into London last week were 692 bales, of which 368 were from Germany, 218 from Russia, 85 from Turkey, 15 from Belgium, and 6 from France.

PRICES OF MANURES.

Subjoined are the present prices of several sorts of manure:—

Bone-dust, 21s. 6d. per qr. of 8 bushels

Half-inch Bones, 21s. 6d. per qr. do.

Rape-dust, 24s. per qr. do.

Rape Cake, 6*l*. 6s. per ton.

Rags, 4*l*. to 4*l*. 10s. per ton.

Graves, 5*l*. to 5*l*. 10s. per ton.

Gypsum, 38s. per ton.

PRICES OF SHARES.

No. of Shares.	Div. per Ann.	IRON RAILWAYS.	Price per Share.
6,300	1*l* 4s p.c.	Birmingham & Derby ..100*l* sh pd	42
6,300	8s	Do. Thirds, iss. 8⅓ dis. 33⅓*l* sh 25*l* pd	
9,500		Do. and Gloucester ...100*l* sh pd	41 a 40
10,000		Do. New, iss. 7½ dis. 25*l* sh 17½*l* pd	
15,000	4*l* per ct	Bristol and Exeter..100*l* sh 70*l* pd	
7,500	2*l* 10s	Cheltenham & Great Western 100*l* sh 80*l* pd	20¼
3,000		Clarence..............100*l* sh pd	
64,000	18s p sh.	Eastern Counties ....25*l* sh 23*l* pd	8½ a ⅝
		Ditto New............8*l* 6s 8d pd	10⅜ a ⅝
64,000		Ditto Debentures .. 8*l* 6s 8d sh pd	10⅜
12,500	3½*l* per ct	Glasgow, Paisley, and Ayrshire 50*l* sh pd	
18,000	5*l* per ct	Edinburgh & Glasgow .. 50*l* sh pd	46¼
18,000		Ditto New..........12½*l* sh 5*l* pd	
16,000		Glasgow, Paisley, and Greenock, 27*l* sh 25*l* pd	
10,918	10*l* per ct	Grand Junction........100*l* sh pd	
11,000	5*l* per ct	Ditto Half Shares ......50*l* sh pd	
10,000	2½*l* per ct	Great North of England 100*l* sh pd	
25,000	4*l* per sh	Great Western .... 100*l* sh 65*l* pd	82¾ a 3
25,000	3*l* per sh	Ditto New..............50*l* sh pd	80¾ a ½
37,500	5s per sh	Ditto Fifths..........20*l* sh 4*l* pd	7⅝ a ½
		Ditto Bonds....1849	
		Ditto Bonds 1850, Letter C	
2,000		Hartlepool............100*l* sh pd	
8,000	1*l* per sh	Hull and Selby .... 50*l* sh pd	
2,100	5*l* per ct	Leeds and Selby........100*l* sh pd	
5,100	10*l* per ct	Liverpool & Manchester. 100*l* sh pd	
7,968	10*l* per ct	Ditto Half Shares......50*l* sh pd	
11,475	10*l* per ct	Ditto Quarter Shares ..25*l* sh pd	
36,000	1*l*	London and Brighton....50*l* sh pd	36⅜ a ¼
		Ditto Loan Notes....... 10*l* sh pd	10½
48,000		London & Blackwall Av. 16*l* 13s 4d	6 a 5½
43,077	3s	London & Greenwich Av. 12*l* 15s 4d	4¾
11,136	5*l* per ct	Preference or Privilege Av. 18*l* 17s 2d	
	5*l* per ct	Ditto Bonds (183,300)............	
25,000	10*l* p sh	London & Birmingh. 100*l* sh 90*l* pd	
25,000	2*l* 10s	Ditto Quarter Shares....25*l* sh pd	47⅜
31,250	3*l* 4s	Ditto Thirds............ 32*l* sh pd	60 a ½
	2*l* 14s	Ditto New.......... 32*l* sh 2*l* pd	30
		Ditto Bonds 1843	
46,200	3*l* per sh	London & South West. Av. 41*l* 6s 10d	58 a 7⅝
		Ditto Bonds 1842	
33,000	13s 4d p s	London & Croydon..Av. 13*l* 15s 9d	
2,000	3*l* per ct	Llanelly Railway and Dock 100*l* sh 70*l* pd	
13,000	3*l* 17s p sh	Manchester & Leeds 100*l* sh 70*l* pd	
13,000	1*l* 13s p sh	Ditto New Shares ....50*l* sh 30*l* pd	
	4s	Ditto Quarter Shares........2*l* pd	4⅛
30,000		Manchester & Birming. 70*l* sh 40*l* pd	19¾ a ¼
		Ditto Extension......70*l* sh 7*l* pd	
10,000	3*l*	Midland Counties...... 100*l* sh pd	61¾
10,000	15s	Do. ¼ Shares, iss. 10 dis. 25*l* sh 15*l* pd	
		Newcastle & Darlington Junction 20*l* sh 3*l* pd	3½ a 3
15,000	2*l*	North Midland........ 100*l* sh pd	59 a 8¾
15,000	1*l* 0s	Do. ½ Shares, iss. 10 dis. 50*l* sh 40*l* pd	29¼
22,500	13s 4d	Ditto Thirds, iss. at 11*l* 13s 4d dis. 21*l* 13s 4d sh pd	19¼ a ⅛
10,256	2*l*	Northern & Eastern 50*l* sh 45*l* pd	36 a 5¾
72,000		Paris and Rouen ....20*l* sh 20*l* pd	
2,600		Preston and Wigan....... 20*l* pd	
4,000		Preston and Wyre......50*l* sh pd	
1,000	1*l* 15s	Sheffield and Rotherham 25*l* sh pd	
1,500	15*l* per ct	Stockton and Darlington 100*l* sh pd	
28,000	4*l* per ct	South Eastern and Dover 50*l* sh pd	22⅞
28,000		Ditto New, iss. 25 dis. 25*l* sh 15*l* pd	11¾ a ⅞
6,700	10*l* per ct	York & North Midland..50*l* sh pd	90½ a 90
6,700	10*l* per ct	Ditto New Shares.... 25*l* sh 20*l* pd	37

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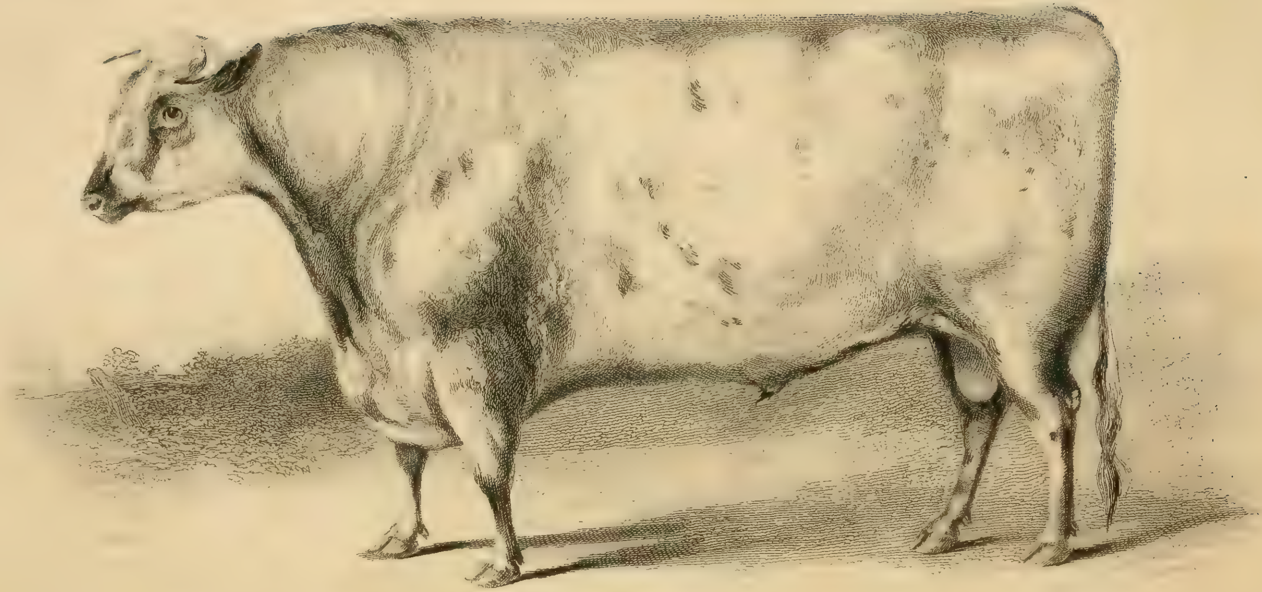

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Winner of the Great St. Leger at Doncaster, September [illegible]

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THE FARMER'S MAGAZINE.

DECEMBER, 1842.

No. 6.—Vol. VI.] [Second Series.

PLATE I.

Our first Plate represents a four years and three months old short-horned Durham Bull, which gained a prize of Thirty Sovereigns, adjudged to Mr. Paul, of Pentney, Norfolk, at the Meeting of the Royal Agricultural Society of England, held at Cambridge, in July, 1840. The animal was bred by Mr. Topham, of West Keal, Lincolnshire.

PLATE II.

BLUE BONNET: Winner of the Doncaster St. Leger, 1842.

Blue Bonnet was little known and less thought of by betting men generally, previous to the morning of the day on which she won the Great Northern Stakes, than might have been anticipated; inasmuch as she was got by that celebrated horse Touchstone, the property of the Marquis of Westminster, whose equal as a racer and a stallion it is somewhat doubtful if we ever see again. Blue Bonnet was bred by the Earl of Eglinton and her dam the Maid of Melrose, who is now in Germany, by the late Earl Scarborough, in 1829, by Brutandorf, dam by Whisker, grand dam by Orville, out of Otterington's dam, by Expectation, Calabrea, by Spadille, Grog's dam, by Alfred, Locust, Changeling, Cade, &c., &c.

A WORD TO THE FARMERS OF ENGLAND.

The writer is a young man, whose knowledge of practical farming is by no means extensive; nevertheless, with his fellow-creatures he is endowed with the powers of observation; and those powers he has exercised to their fullest extent in observing the extremities to which the various classes of mankind *rush*, in the exercise of their daily avocations; not, be it remembered, with respect to the degree of exercise which they undergo, but in the mode of carrying out their designs: and in no class of men has he witnessed greater extremes in this respect than amongst agriculturists—to agriculturists, therefore, he will particularly address himself.

As a body of men, it may justly be said, they are of more importance to the welfare of the community at large than any other class, and therefore whatever concerns them concerns their fellow-countrymen. It may be stated, in reference to this argument, by the lukewarm and indifferent, that the interests of one class have no connection with the interests of another, and that the wiser plan is to allow every individual to attend to his own concerns—in other words to *let every man mind his own business*; but the writer is one of those who look upon society, or a nation, as one great whole, the welfare of each member of which necessarily depends on that of the remaining portion—for history plainly teaches him the important lesson that if one class of a community suffers, it cannot long exist in the same state without clouding the prosperity of the whole.

From these convictions the writer has drawn the conclusion that, observing as he does great evils to exist in the agricultural world, it is his duty, as a member of society, to endeavour to call the attention of the parties more particularly interested to the evil referred to.

The extremes spoken of are those which exist with reference to the adoption of machinery—extremes which are working an incalculable amount of evil to society, not only by the necessary loss of property, but by the encouragement of a system of *machine quackery*, whereby the uninitiated are often imposed upon to a manifest disadvantage. In order the better to illustrate the subject, agriculturists may be divided into three classes—those who are prejudiced against the introduction of any new machinery, and who form by far the greater portion; those who speedily possess themselves of every new and untried machine, and after giving it an insufficient trial, pronounce it useless and discard it for ever; and those who purchase new machines indiscriminately, with a pre-determination in their favour, and who invincibly resist any proofs, however great, against the utility of any machine in their possession, either from a feeling of shame to acknowledge their error, or of pride in their boasted superior judgment.

Each of the above classes exercises a baneful influence upon farmers generally; and to show the absurd principles which actuate each, in their *most striking* colours, the writer will briefly consider each class separately: and firstly, those who are prejudiced against the introduction of any new machinery whatever. The chief arguments of this class are, firstly, the numbers of labourers that will be thrown out of employment by the introduction of machinery; and secondly, the fact that their forefathers did very well without the new inventions, and why should not they!

Now the writer dares to assert, in reply to the first objection, that there are more individuals employed, in proportion to the number of acres cultivated at the present day, than there were fifty years ago; for there are now neater hedges, cleaner crops, better roads, more perfect drains, and greater produce, than there were at that period—a period when the thrashing was done with the *flail*, and no implements were used in farming but the *wain*, plough, harrow, roller, fork, hopper, rake, &c.; when the farmer could not afford to drain his ground, trim his hedges, repair his roads, irrigate his meadows, scour his ditches, or do any of those necessary jobs which contribute so much to the neatness and profit of the farm. The writer is perfectly convinced that if machines were to be entirely abolished, and the labourer compelled to do all the work manually, there would not be *so many men* employed; for it has been repeatedly observed that the agriculturist who has the greatest number of, and the most perfect machines, invariably employs the greatest number of labourers; and it is easy to be explained why he does so. For instance, he purchases a machine which costs him a certain sum, say 40*l.*; and he finds that to do his work with such machine, he must incur an annual expense of 10*l.*; but that, had this work been accomplished solely by manual labour, it would have cost him 30*l.* per annum; thus saving the cost of the machine in two years, and actually saving 20*l.* per annum afterwards—what is the consequence? He has his work better executed—can afford to have work done, which went undone previously for want of means, in addition to which he sells his produce at a less price. But, supposing he gets his labour performed for no less by machines than he did by manual labour, still he economizes his material, which is a *national* advantage. Again, the introduction of machinery has certainly lowered the price of agricultural produce; still the wages of the agricultural labourer have not decreased—hence it is an advantage to the labourer.

Having clearly shewn that the introduction of machinery has not reduced the number of agricultural labourers, and that the circumstances of that necessary class are thereby improved, the writer will proceed to refute the arguments in the second objection. The farmer of the present day has greater difficulties to contend with than his forefathers experienced. Population is increasing rapidly; and consequently an increased quantity of food is required for their sustenance; and however much may be advanced in favour of the importation of foreign agricultural produce, still the most violent will acknowledge that, *if possible, true political economy consists in each nation supplying its own population with food.* But it matters little to the argument adopted by the writer, whether there be a foreign supply of food or not; inasmuch, as in either case, the farmer on poor land must come in competition with farmers on rich land. The observer of the country—or rather the traveller—has had frequent opportunities of witnessing that, until recently (and, even now, in too many instances), several fields on some farms were allowed to lie in an inactive state, and merely used as a sheep-walk; these in many instances have been *broken up*, and are now producing excellent crops. How has this been brought about? Most assuredly by the introduction of machinery, or rather improvements in machinery, operating either immediately or indirectly. But, it may be said, why bring land into cultivation which requires machinery to make it fertile? The answer is, that every true patriot—every man who is not biassed by party feeling, will see that it is of national importance to cultivate every inch of land in the kingdom; for although we are at present supplied with agricultural produce from other countries, we know not how soon the supply may fail. Population will increase on the continents of Europe and America, as well as in England; and if we are to maintain our independence and preserve our liberty, we must prepare to feed our own population. Science and machinery alone can accomplish this; for it is well known that, unless with the assistance of machinery, a man could not even support himself on some of the poor lands of this country, but by the adoption of machinery he can raise wherewith to support many. These are the reasons why our forefathers did very well without those new inventions which are indispensable to us.

The arguments already brought forward are intended to overthrow the objections usually urged against the use of new machines, and they go to show the danger of one extreme of conduct on the part of agriculturists. The following will illustrate the danger of the opposite extremes:—

Those who speedily possess themselves of every new and untried machine, and after giving it an insufficient trial, pronounce it useless and discard it for ever, sorely impede the progress of agricultural improvement: and unfortunately this class of individuals is very numerous. Every farmer, before he purchases a new implement, should ask himself three questions—in the first place, if he requires such a machine? secondly, if he is convinced it will answer the purpose for which he requires it? and thirdly, if the price is such, that it will be a profitable implement to him?

Many agriculturists have been tempted solely by the appearance of a machine to purchase it, when perhaps they have already one in their possession, which, although not so perfect, it would be attended with a greater loss to dispose of than the new machine would counterbalance; under such circumstances it is needless to say, it would neither be a profitable implement, nor is it required. Again, many men have been imposed upon by the quackery of machine-venders; and it behoves the agriculturist to be very cautious in selecting his machine, not to be deceived by the pretensions of the seller, and to be quite satisfied, by repeated experiments, that it will answer the purpose for which he requires it. He should also be exceedingly particular in making trial of it, for the writer has seen instances of the best agricultural implements having been condemned by an imperfect trial, and solely through the ignorance of the operator, to the injury of the inventor and of society at large. Nevertheless, when once an implement is proved to be of little or no advantage, such fact should be made known to society for the advantage of all.

Unfortunately, some there are who, having purchased a machine incautiously, and discovered its imperfections, are either ashamed, or too proud, to acknowledge it; particularly as, in some cases, where they have proudly proclaimed its advantages before they had given a sufficient trial to prove its inefficiency. This class of persons are most to be dreaded by the farmer, especially as it is generally seen that to this class belongs the experimental farmer—the man who is perhaps independent, and whose assertion, therefore, carries some weight with it. Too frequently the landlord belongs to this class, where he has still more influence with the neighbouring agriculturists; nevertheless, if the advice given above is strictly adhered to, namely, to give every implement a perfect trial before it is purchased, this evil will, to a certain extent, be abolished. Still it must be regretted that such persons should exist, as an incalculable injury is inflicted upon individuals, as well as the community at large, by such extremes.

The writer has now briefly, and he fears very imperfectly, set forth the abuses which exist with relation to the adoption of machinery for agricultural purposes, showing that the too liberal patronage of newly-invented implements may lead to injury, no less than the bigoted exclusion of them; still he would earnestly impress upon the minds of farmers in general the necessity of giving all possible encouragement to improvements in machinery, as a means whereby they will be enabled to withstand successfully the competition of foreign agriculturists, and to provide for the wants of their own people without being placed at the mercy of a foreign government. As for individuals to contend that the use of machinery is either injurious or improper, is quite preposterous; since there can be no doubt whatever, in a well-educated mind, that man's genius was given him by his Creator to be exercised in promoting the welfare of his fellow-creatures; and that inanimate matter was placed at man's disposal, to be made use of in such way as his genius might dictate to him was most beneficial to his fellows. There cannot be a shadow of doubt, then, in a well-regulated mind, that the introduction of machinery is proper; indeed, if it were for no other reason, the fact that thereby a great amount of human and animal slavery is abolished, would be quite sufficient argument in its favour.

Besides which, those very persons who are the most opposed to the introduction of machinery would still retain the old ones, forgetting that these were once new, and that if their arguments had always been acted upon, the plough and harrow would never have been introduced, since these are *as much machines* as the most complicated implement of the present day: so that the question becomes this, whether machines are calculated to be of benefit to mankind—that is, in agriculture? Now, it is to be hoped that none of the readers of this paper are ignorant of the fact that the most advantageous course, in the end, to society generally, is for the manufacturer or the agriculturist to *produce the greatest amount of stock at the cheapest possible cost.* Whatever will assist in this object will unquestionably be beneficial to society; and that the several inventions and improvements in machinery which have been made within the last fifty years, have enabled the farmer to raise a greater amount of produce at a cheaper rate, is incontrovertible.

With respect to the number of labourers that may be thrown out of employment by the introduction of any certain machine, sufficient has already been stated; and it only remains, therefore, for the writer to caution farmers generally against running into either of the extremes spoken of in the former part of this paper, but steadily to adhere to a middle course, as being that most likely to forward the interests of individuals, as well as the community at large.

G. Thompson.

Lion Street, Kidderminster,
October 24th, 1842.

REPORT ON THE EXHIBITION OF IMPLEMENTS AT THE BRISTOL MEETING IN 1842.

(FROM THE JOURNAL OF THE ROYAL AGRICULTURAL SOCIETY.)

It would be a superfluous task for the Judges of Implements to preface their report to the Council with any panegyric on the advance made, since the last meeting, in the science and practical perfection of agricultural machinery. The increased area required for the display of the implements bore ample testimony to the fact of a large accession of exhibitors; and the unanimous judgment of hundreds of disinterested visitors pronounced the exhibition to excel all its predecessors in the variety, ingenuity, and general perfection of the vast assemblage. These circumstances, so honourable to the mechanical profession, and so encouraging to the founders and supporters of the society, have rendered the task of the judges one of increased delicacy and difficulty. They have had to discriminate and decide between the qualities of numerous implements of nearly equal merit; inventions for perfecting or economising processes in husbandry hitherto unthought of, or considered to be unattainable by the agricultural mechanic, have demanded their investigation, and the appropriation of premiums; machines in embryo have been offered to their notice as deserving commendation and encouragement; and their duty has required a frank exposition of the performance—whether excellent or defective—of those implements which were submitted by exhibitors to the practical trial, so wisely and beneficially established by the society as the test of merit, and the title to distinction. The observations annexed to the several classes of implements assigned by the Council as the subjects of reward, together with the notices of the miscellaneous articles, the selection of which for prizes was left to the discretion of the judges, will explain the reason which induced them to award, or in some cases to withhold, the offered premiums. These running commentaries will, perhaps, convey a more correct idea of the present state of agricultural mechanism, in most of its branches, than if a distinct summary of what has been, and of what remains to be accomplished, were attempted.

It has been asked in our Journal "why, but on account of the separate and secluded scene of the farmer's industry, is the spread of agricultural inventions so slow?" and "what, but a central connexion of the cultivators of the soil, can diminish the distance and remove the obstruction?"* The truth of both these observations will find strong and abundant confirmation in the following pages. The energies of thousands are now concentrated and exerted for the common purpose of collecting, comparing, and disseminating the scattered experience of agriculturists, as well as of profiting by every known or possible means of increasing the products of the soil; and it must be the fault, no longer the misfortune, of a farmer if he remains in ignorance of what is known or practised by others.

The judges present the following

AWARD OF PREMIUMS.

1. Ploughs.

To the Hon. M. W. B. Nugent, of Higham Grange, near Hinckley, Leicestershire, for his subsoil-pulverizer, 15 sovs.

To John Howard, of Bedford, for his two-wheeled plough, 5 sovs.

To the Earl of Ducie, of Woodchester Park, near Stroud, for a swing plough, constructed by Mr. Richard Clyburn, 5 sovs.

To John Stokes, of Pauntley Court, near Newent, Gloucestershire, for his two-wheeled plough with pulverizing knives, constructed by Mr. Wm. Mason, of Grafton, Warwickshire, 10 sovs.

To Robert Law, of Shettleston, near Glasgow, for his trenching and subsoil plough combined, 5 sovs.

2. Drills.

To Richard Hornsby, of Spittlegate, near Grantham, for his drill for general purposes, 30 sovs.

To Messrs. Garrett and Son, of Saxmundham, for their turnip and manure ridge-drill, 20 sovs.

To William Grounsell, of Louth, for his lime and soot drill, 5 sovs.

To William Crosskill, of Beverley, for his lime and soot scatterer, 3 sovs.

To Thomas Huckvale, of Over-norton, Oxfordshire, for his liquid-manure depositor, 3 sovs.

3. Horse-hoes.

To Messrs. Garrett and Son, of Saxmundham, for their improved horse-hoe, 10 sovs.

To Robert Law, of Shettleston, near Glasgow, for his expanding horse-hoe and harrow attached, 3 sovs.

To Richard Merrett, of Appleadon, near Newent, Gloucestershire, for his Dutch horse-hoe and harrow attached, 2 sovs.

4. Cultivating Implements.

To William Crosskill, of Beverley, for his patent grass-land cultivator, 5 sovs.

To Messrs. Cottam and Hallen, of London, for their light scarifier, or grubber, 5 sovs.

5. Cake Crusher.

To Messrs. Garrett and Son, of Saxmundham, for their cake-crusher, 5 sovs.

6. Turnip-Cutters.

To Messrs. Sanders and Williams, of Bedford, for their turnip cutter, 5 sovs.

To Messrs. H. and T. Proctor, of Bristol, for their turnip and chaff-cutter combined, 3 sovs.

7. Cheese-Presser.

To W. Jas. Gingell, of Bristol, and Wrington, Somerset, for his lever cheese-presser 5 sovs.

8. Haymaking Machine.

To Jas. Lovell, of Glastonbury, Somerset, for a haymaking machine of his own invention, 10 sovs.

9. Horse-Rake.

To Joseph Cooke Grant, of Stamford, for his improved patent lever horse-drag rake, 5 sovs.

10. Harrow.

To Benjamin Wright, of St. Nicholas, near Cardiff, for an improved harrow, the invention of Mr. Evan W. David, of Radyr Court, 5 sovs.

11. Miscellaneous.

To William Crosskill, of Beverley, for his potato-steamer, 2 sovs.

To S. J. Knight, of Maidstone, for an improved mode of applying the power to hand-thrashing machines, the invention of Mr. Joseph Barling, of Maidstone, 5 sovs.

To Alexander Dean, of Birmingham, for his patent portable corn grinding and dressing mill, sovs.

To Edward Plenty, of Newbury, Berks, for his portable iron horse-machinery for thrashing machines, &c., 5 sovs.

To Messrs. Cottam and Hallen, of London, for their dynamometer, or draught-guage, 5 sovs.

To Messrs. Cottam and Hallen, of London, for the cocoa-nut-fibre netting for sheep folding, manufactured by Messrs. Wildey and Co., of Holland-street, Blackfriars, London, 3 sovs.

To James Richmond, of Salford, Lancashire, for Worth's patent roller chaff machine, 3 sovs.

To Richard Stratton, of Bristol, for his cross-lock waggon and general exhibition of carts and waggons, 10 sovs.

To Robert Law, of Shettleston, near Glasgow, for his Scotch one-horse cart with improved tipping catch, 3 sovs.

To Messrs. Charles and Thomas Thatcher, of Midsomer Norton, near Bath, for their cart with self-acting brakes, 5 sovs.

To Messrs. Ransome, of Ipswich, for their application of portable and locomotive steam-engines to agricultural purposes, 30 sovs.

To William Cambridge, of Market Lavington, Wilts, for his portable steam-engine, as applied to agricultural purposes, 15 sovs.

Drills.—The show of drills far surpassed in number, in excellence of workmanship, and in their adaptation to the several purposes for which the system of drill-husbandry is now so extensively applied, all previous exhibitions. The advance made in the execution of drilling machinery, since the establishment of the Society, is an undoubted proof of the stimulus excited by its prizes, and of the wide-spreading advantage derived from the opportunity afforded to constructors of annually comparing their own productions with those of other makers. Drills have already penetrated into districts where, three years since, their purpose, and even the name of the implement, were scarcely known; and excellent machines were produced from workshops which have but very recently essayed their manufacture. It would, indeed, appear that, unless some new principle be struck out, which shall greatly excel the present system of construction, little remains to be done as regards fulfilling the required objects of this most important class of implements. Seed corn of every description may be deposited with the greatest precision in any quantity, and at any desirable distance and depth. The manure-depositing machinery has, heretofore, opposed the greatest difficulties, but these have rapidly yielded to skill and experience; and, now, even damp compost is put into the soil, conjointly with the seed, and with a regularity which leaves little room for further improvement.

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* On the Present State of the Science of Agriculture in England, by Ph. Pusey, Esq., M.P., 1839.—Journal of the Society, vol. i. part i., p. 16.

To Mr. Hornsby, of Spittlegate, near Grantham, the Society's prize of £30 was again considered to be due for his drill for corn and general purposes. The implement differs chiefly from that exhibited last year in the parts affecting the delivery of manure or of compost. Mr. Hornsby has succeeded in producing a constant agitation of the manure in the box, by communicating to the stirrers a rising and falling motion as they revolve, and, at the same time, traverse the box from end to end; so that no part of the contents remains in a quiet state, or can become consolidated. In addition, he has fixed the slide, or inner part of the box, on hinges, so that the attendant can contract or expand the aperture through which the manure falls into the delivering-cups, and thereby regulate its discharge and deposition with the greatest exactness. The whole mechanical arrangements and execution of this drill are excellent, durable, and yet so simple that an ordinary labourer is competent to adjust it for every description of work.

To Messrs. Garrett and Son, of Saxmundham, the judges awarded the premium of £20 for a ridge turnip and manure drill, and have to notice some alterations in its structure which render the implement applicable to a greater variety of soils than the one rewarded at Liverpool. The drilling part of the machine is now supported on two wheels, from which the requisite power is derived, and motion communicated to the apparatus for stirring and delivering the seed and manure. The pressing rollers are attached to a fore-carriage removeable at pleasure. An improvement has also been introduced in the manure-box by giving to the stirrers a perpendicular as well as a revolving movement, and the quantity delivered is regulated by raising or lowering a slide, which enlarges or diminishes the space through which it falls. In the latter respects, however, the judges consider Mr. Hornsby's machinery the most effective.

The excellent assortment of machines exhibited by these and other makers bore testimony to the general advancement of mechanical skill, both as regards finish of work and the large comprehension of the purposes to which mechanism may be rendered subservient in agriculture. In design, as well as in the details of execution, a marked improvement was observable.

Several drills of a more economical character, or restricted to special objects, claimed attention. Mr. Groundsell, of Louth, had a prize assigned him for his drill combined with a newly-invented apparatus for spreading soot, lime, or other light substances, on the surface of the land. Much praise is due to Mr. Groundsell for the great attention he has paid to manure-depositing machinery; and with him, it is understood, the stirrers and expanding sides applied to the manure boxes of drilling machines originated. With a little more attention to fittings and finish, Mr. Groundsell's machines would possess still greater excellence; but, whilst making this remark, the judges would caution agricultural mechanics against falling into the opposite extreme, as highly polished work is not only out of place, but objectionable, when applied to parts of machines inevitably exposed to weather and dirt. It enhances the cost, without any compensating advantage.

To Mr. Crosskill, of Beverley, a prize was also awarded for a drill to scatter soot and lime, possessing, like Mr. Groundsell's, ingenious contrivances for guarding these light substances from the effects of wind during their deposition. To the same maker another prize was given for a novel machine of the drill kind, called a grass-land cultivator. Its object is to renovate mossy or hide-bound pastures, by cutting out the old sward in a series of parallel grooves, which is effected by strong coulters set at any convenient width asunder, and to a depth suitable to the soil, a drill at the same time depositing fresh seed and compost. The land is afterwards rolled. This implement appeared to be well calculated for these useful purposes, and may be the means of renewing and fertilizing old grass-lands and parks, without having recourse to the plough to reverse the sod. A liquid manure cart, by Mr. Crosskill, with pump attached, and contrived either to spread the fluid, or deliver it upon two rows of turnips at any required width, is to be commended as apparently well adapted to its purpose.

The ingenuity of Mr. Huckvale, of Over Norton, has also been exercised in the construction of an implement for depositing or sprinkling liquid manure. It consists of two water-tight cases for carrying the fluid, fitted into the manure-boxes of his turnip-drilling machine. The fluid is conveyed through a pipe into a second reservoir, in which works a wheel with cups. These collect and throw out the liquid in the desired quantity on the turnip ridges. He applies the same machine to pass along the ridges, to sprinkle the young plants with a fluid which he represents as destructive to the fly. A premium of 3*l*. was adjudged to the inventor for his mechanical skill in bringing about these ends, of which the precise effect and value can, however, only be ascertained by a practical trial, and experience.

To the above-named gentlemen, to Messrs. Carson, Clyburn, Law, Cottam, and Hallen, and others, the Society was indebted for the exhibition of well-executed drills for sowing turnip-seed and manure in single and double rows, and adapted to the use of small occupiers. Several exhibitors also produced drills for sowing clover and grass seeds, which bid fair to become useful auxiliaries to the farmer, by giving to that process the certainty and regularity which render the drill system of husbandry so superior to the broadcast. Mr. Hornsby's implement deserves particular mention and commendation, as it appeared to be admirably suited for these purposes. It is furnished with twenty coulters upon separate iron levers, set at three inches asunder, and delivers the seed by means of cups, thereby securing to the delicate grass seeds the uniformity of drill deposition, with the nearest possible approach to broadcast distribution.

A drop-drill or dibbling machine, on a novel principle, was exhibited by Mr. William Irving, of Lambeth, Surrey, to which the judges had hoped to give particular attention in the field, but time did not permit; and, as the inventor contemplated making still further additions to it, its effect will be ascertained with greater advantage on a future occasion. The same observations apply to a newly-patented dibbling or seed-dropping machine, the invention of Mr. Shaw, of London, and exhibited by Mr. C. C. Waller, of Great Dover-street, Southwark.

The report of implements shown at Liverpool contained a minute description of the machinery projected by the Rev. W. L. Rham for drilling and dibbling. The implement, with some modifications, was again exhibited, and, on this occasion, submitted to trial in the field. The judges regret their inability to pronounce a favourable opinion of its efficiency in its existing state. The ground was, certainly, in a most unpropitious state for the operations of this machine, yet the experiment was sufficient to warrant the conclusion that the resources of the ingenious and persevering inventor will have to be still further taxed, in order to communicate that force and certainty of action to his dibbles, and to his seed and manure apparatus, which are essential to give practical value to implements of this class.

Horse-hoes.—Horse-hoes for general and special purposes were numerous and well constructed. The excellent implement of Messrs. Garrett and Son, still further improved, was again selected for the Society's premium, as eminently calculated to answer the various ends to which it is applicable, as noted in the last report.

To Mr. Law, of Shettleston, near Glasgow, a prize was also given for an expanding horse-hoe and harrow, a powerful, cheap, and useful implement.

Mr. Huckvale's single and double revolving hoe for thinning and hoeing turnips on the ridge system of culture was tried in the field, but under the disadvantage of there being no turnips in growth on which to exhibit its powers. Owing to this circumstance, the judges would consider it to be presumption, on their part, to offer an opinion on its practical efficiency. Whether a machine can be made for materially aiding and expediting manual labour in the thinning of turnips, is a question which can only be decided by ocular inspection and experience of its effects. It is very desirable that this implement which is simple, and requires but little power, should be practically tested by agriculturists.

To Mr. Richard Merrett, of Appleadon, near Newent, a prize of 2*l.* was given for a Dutch horse-hoe and harrow attached. Credit is due to Mr. Merrett for introducing into agriculture one of the most efficient horticultural implements. It is particularly applicable to the cleansing of drill-crops, on fen and peat soils, subject to annual weeds, and to work between the rows of carrots, mangold-wurzel, &c., when the land is not very hard and stiff.

Scarifiers, Cultivators, &c.—The extensive collection in the show-yard of that powerful class of machines for cleansing and working the soil, denominated scarifiers, cultivators, &c., &c., passed under the examination and excited the admiration of the judges; but, as there appeared to be no material improvement effected in the construction of the most efficient of these implements since the exhibition of last year, they did not consider themselves justified in assigning the Society's prize to any one of them. A reward was given to Messrs. Cottam and Hallen, for a light scarifier, or grubber, as it seemed well adapted to the use of the small farmer. An enormous machine appeared in the collection of these gentlemen, purporting to be a substitute for the plough, and to act as a general cultivator of the surface of the soil—the invention of Lady Vavasour. Upon trial on a favourable soil, both before and after the plough, it was found that, instead of working the soil, and leaving it in a friable, loosened, or dug state, the earth adhered to the spoon-shaped teeth on the barrel, closed the spaces between them, and accumulated until the machine became an immensely heavy roller, consolidating the ground, and completely reversing the intentions of her ladyship. The judges cannot but regret that previous experiment had not spared them the pain of condemning a principle of construction which was so palpably faulty as to render the failure of this costly implement inevitable.

Cake-crushers.—The competitors for the premium offered for cake-crushers were not numerous. It was adjudged to Messrs. Garrett and Son, of Saxmundham, and well merited for their strong and complete implement, which separates, if wanted, the dust for calves, breaks the cake large for beasts or small for sheep, and powders it for manure.

Corn-cleaning Machines.—Corn-cleaning or dressing machines seemed to have exercised the ingenuity of several well established makers, and the workmanship bestowed on them may be pronounced to be of an improved order; but no very particular superiority being discernible among these implements, the Society's prize was not awarded. The Earl of Ducie exhibited a barley hummeller, fitted with a fan-blast; an addition which may be found to give greater efficiency to these recently introduced and useful appendages to barn-machinery. Mr. Cartmell's (of Liverpool) corn-kibbling machine, rewarded at the last meeting, merits notice and commendation for its excellent workmanship, and for the method of regulating the distance between the rollers, by which they are set closer or wider, and always kept parallel with each other; instead of being ill-adjusted, as they commonly are, by a screw at each end.

Turnip-cutters.—A variety of turnip-cutters was produced, and the premium was awarded for an implement constructed by Messrs. Saunders and Williams, of Bedford. It was not, however, without much doubt and hesitation that the judges determined on assigning this prize to any one of the competing makers. They feel that the turnip-slicer is a machine of such consequence to agriculturists, that a marked preference—of which a premium is the index—should only be accorded after a trial of the most satisfactory nature; and this cannot be instituted in the month of July, nor in the show-yard of the Meeting. The only proper site for determining the qualifications of these implements is the field, and during a winter's season. It would then infallibly appear which among rival machines was preferable, on a trial with roots in a soft and frozen state, and under the circumstances of great quantities being required for daily use. The machine which worked with the least labour, made the least waste, &c., would then manifest its qualities, and a safe judgment could be pronounced.

To Messrs. H. and T. Proctor, of Bristol, a prize of 3*l.* was awarded for a turnip and chaff cutter combined, so as to produce, at a single operation, a mixture of the two kinds of food, or each could be worked separately.

Churns.—No churns were exhibited.

Cheese-pressers.—The premium of 5*l.* was awarded to Mr. W. J. Gingell, of Bristol, for his cheese-presser, as it appeared to possess, in a superior degree, the properties of simplicity, and of adaptation to the capacity of the dairy-maid. The force is derived from a single lever, with moveable weights. The action on the cheese is constant, and its amount can be regulated at will. This press is, probably, more suitable for a small than a large dairy, and where one cheese only is under press at a time. Other well-contrived presses, and of a more powerful kind, were exhibited; the judges highly commend the machine constructed by Mr. J. Wright, of Glastonbury, which ingeniously combines the use of the screw with the continuous action of compound levers.

Hay-making Machine.—The hay-making machine invented and constructed by Mr. James Lovell, of Glastonbury, was selected as well deserving the premium of 10*l.* This implement does not, like those in more general use, take the grass or hay round upon the rakes, and throw it over in the air, but simply turns and spreads it. The teeth are straight, and not likely to become clogged. For travelling they are turned in towards the axle. The four rows of teeth are fixed upon a shaft which revolves immediately over the main axle of the carriage, from which it receives its motion. The rakes, therefore, adapt themselves to the inequalities of the ground, by ascending and descending with the carriage-wheels. The pinion on each end of the rake-shaft gears into a cog-wheel with inside teeth fixed to the carriage-wheel, and are well protected from clogging. By this arrangement the rakes revolve in the same direction as the carriage wheels, and leave the grass spread behind them as the machine advances. Both pinions are moveable, and are readily disengaged or put in gear by the driver, who sits on a seat attached to the fender, so that either carriage-wheel can be made stationary when the machine has to be turned round. It is calculated for spreading about five acres per hour.

Horse-rake.—The premium for a horse-rake was again awarded to Mr. J. C. Grant, of Stamford, for the same excellent implement originally exhibited at Liverpool. The inventor has further improved it by substituting an iron for a wood bar, to carry the levers, by which change greater durability and more certain action are ensured.

Harrow.—To Mr. B. Wright, of Cardiff, the prize of 5*l.* was accorded for a harrow, the invention of Mr. Evan W. David, of Radyr Court, constructed on the rhomboidal principle, and dividing the soil in rows 1½ inch asunder. Much ingenuity was displayed in combining several harrows together, so as to accommodate them to ridges, and to cover a large breadth of land. These, as well as some hollow iron swingle-trees, by the same maker, were remarkable for their lightness, strength, and good workmanship.

Potato-steamer. — *Clod-crushers.* — Amongst the miscellaneous articles there was much to occupy the attention of the judges. Mr. Crosskill's collection contained a simple and well-arranged portable potato-steamer, the whole of metal, which was considered to be worthy of reward. Mention must also be made of an improvement in his well-known and valuable clod-crusher. In the original implement the axle was square, and revolved with the bruising rims. Mr. Crosskill has since substituted a cylindric axle, upon which each rim turns freely. This change has improved its effect, particularly for rolling growing wheat in the spring of the year, for which purpose it is much used on light soils. The injurious screwing or twisting action on the soil and plants in turning the machine round is prevented by this new arrangement.

Mr. Joseph Hall, of Cambridge, drew the attention of the judges to an implement also designed for clod crushing. It may be described as a large spiral with jagged peripheries, wound round a shaft or axis, and resembling a screw. The practical effect of this arrangement could not be ascertained, as the implement was in an unfinished state; but its principle of action seemed not unlikely to produce the desired result, and merits trial.

Furrow-presser.—A two-furrow presser, by Mr. Crosskill, with drill attached, is much used in Yorkshire and Lincolnshire, and found to be a very advantageous implement for depositing wheat and manures. It follows two ploughs.

Thrashing-machinery.—A premium of 5*l.* was awarded to Mr. S. J. Knight, of Maidstone, for a new method of communicating rotary motion to thrashing machines by hand labour, the invention of Mr. Joseph Barling, of Maidstone. The means used may be described as resembling the lever power adopted in fire-engines, only placed at a greater height, so that the weight of a man's body combines with his muscular force to produce the effect. This arrangement was ingeniously managed, and the machine was worked with more apparent ease than with the winch. It remains steady during work. It is proper, however, to observe that the judges had not the opportunity of ascertaining its effect when actually thrashing. Mr. Crosskill's method of adjusting the concave to the drum of thrashing machines deserves commendation. By its means the concave cannot be approached too near the drum, so as to break the grain; and the employer has the advantage of observing the position of the concave, and of altering it without the trouble of stopping the machine. A prize of 5*l.* was given to Mr. Edward Plenty, of Newbury, for a substantial and durable arrangement of the horse machinery for driving portable thrashing-machines. The whole is of iron, very compactly put together, and readily fixed for work. The horse-machinery of thrashing-machines, constructed by Messrs. Garrett and Son, of Saxmundham, was also of an improved order, particularly the large iron segmental wheel, which is so contrived that any one segment can be renewed by the attendant in the event of a tooth being broken. The bolting-machine of the same makers for thrashing wheat without breaking the straw, is a valuable implement for the suppliers of straight straw for the London and other markets.

Flour-mills.—Domestic flour mills have, perhaps, not yet received that encouragement from agriculturists which they merit. Two good machines were exhibited by Mr. Alexander Dean and Mr. Zachariah Parkes, both of Birmingham. A premium of 5*l.* was adjudged to Mr. Dean for his grinding and dressing mill, which was applicable to hand, steam, or animal power. These improved metallic mills are now made cheap and durable, and will form an economical appendage to the farmer's stock of domestic machinery. They are also well adapted to the circumstances of colonists and emigrants.

Dynamometer—Netting for Sheep-folds—Hatching apparatus.—To Messrs. Cottam and Hallen, of London, a reward of 5*l.* was considered to be well deserved, for their dynamometer, or draught-gauge. This is an instrument of great value for ascertaining the resistance of ploughs and other implements of culture: and experience has sanctioned its sufficiency to measure, with a near approach to accuracy, the amount of force derived from the peculiar action of the draught-horse. With careful management it is little subject to derangement. The same makers exhibited a specimen of netting for folding sheep, spun from the fibre of the cocoa nut; a material known to possess very great durability when exposed to alternations of weather. A premium of 3*l.* was adjudged to Messrs. Wildey and Co., the manufacturers, of Holland Street, Blackfriars, London, in the hope of encouraging the introduction of a more lasting article than hemp for this purpose. An elegant apparatus for hatching and rearing game and poultry, the invention of Mr. Appleyard, also appeared in the collection of Messrs. Cottam and Hallen, which recommends itself by its simplicity, moderate dimensions, and apparently easy regulation of the requisite heat, supplied by a small oil-lamp. This invention is well worthy the attention of poultry rearers, as well as of the proprietor of game preserves.

Carts and Waggons.—The show-yard was rich in an assortment of carts and waggons. To Mr. Richard Stratton, of Bristol, a premium of 10*l.* was assigned for the extraordinary variety and good workmanship of his immense collection; more particularly for the ingenuity displayed in the construction of a cross-lock waggon, which facilitates its turning in a very small space, and permits the use of four large wheels of equal diameter. A tipping waggon also possessed much mechanical merit, but it is to be recommended as better adapted to commercial than to agricultural use. Mr. Stratton produced an excellent specimen of the low-chested cart, obtained by cranking down the axles, now in such general use by mercantile men and shippers. This disposition, modified to suit farming purposes, well merits the attention of agriculturists, as it would greatly ease the toil of the labourer. Of Mr. Hannam's (of Burcot) unequalled one-horse harvest cart, described in vol. ii. of the Journal of the Society, more need not be said than that it cannot be exhibited too often, and that it ought to be found on every farm. To Mr. Robert Law, of Shettleston, near Glasgow, a prize of 3*l.* was awarded for his Scotch one-horse tipping cart with a spring catch to retain it on the shafts. This simple little contrivance is much preferable to pins and cotters, which are apt to shake out, or to be neglected in the fastening, by which the load is not unfrequently let fall.

Self-acting Brakes.—A reward of 5*l.* was given to Messrs. C. and T. Thatcher, of Midsomer Norton, near Bath, for their cart with patent self-acting and self-regulating brakes. Two light chains are attached to the breechband of the horse, one on each side, which pass round a pulley on the respective shafts, and are thence brought back to the cart, where they are hooked to levers which act with clips against friction-hoops staked on the inside of each wheel-nave. When the horse backs on going down a declivity, he causes the clips to press against the hoops with sufficient force to stop or regulate the velocity of a loaded cart descending the steepest hill. This contrivance promises to be a highly useful appendage to carts in hilly districts. It is also applied to waggons and pole carriages.

The judges regret that the show-yard did not furnish a single specimen of a waggon or one-horse cart on springs, so much used and approved by the manufacturers of Lancashire and Yorkshire, and so well adapted as they would be found, for the economical and speedy conveyance of farm produce to market.

Portable Forge.—Amongst the miscellaneous items in the collection of the Earl of Ducie, a light portable smith's forge was exhibited, the invention of Mr. Richard Clyburn, which deserves notice and commendation, as useful to the owners of extensive estates and farms lying distant from a forge or town. The whole weighs about eight cwt., is compact, and of easy transport. It is especially remarkable for the adaptation of a small fan, instead of bellows, turned by a boy, and affording a blast sufficient for welding a three-inch bar. The substitution of a fan remedies the great evil hitherto attaching to portable out-door forges, from the rapid decay of bellows. This implement is admirably suited to the wants of the emigrant and of settlers on waste lands.

Draining tools and Tile machine.—There was no collection of draining tools answering to the terms of the Society's offered premium. A tile-making machine of much merit, the invention of Mr. Wm. Irving, of Lambeth, was exhibited by Mr. Ford, of Nine Elms, Vauxhall. This implement was overlooked by the judges till after the award of the prizes was rendered to the Council. A subsequent examination and trial of its powers proved that it would have been well entitled to a premium, as contributing to diminish the cost of an article so essential to agriculturists. The machine is remarkably simple and cheap, turning out sixteen draining tiles, and twice that number of soles, at once. It may be safely reported as capable of producing, from well prepared clay, 5,000 tiles per diem, by the labour of one man and four boys.

Steam-engines.—Four steam-engines adapted to give motion to implements in the barn were exhibited. Messrs. Ransome's collection contained the excellent portable disc-engine (tried at Liverpool), now set upon a carriage with four instead of two wheels, and having a platform of sufficient dimensions for the conveyance of a thrashing machine from farm to farm. A further change had been made by applying the power of the engine to give locomotion to the carriage, instead of using horses.

A small and cheap engine, nominally of two-horses' power, also furnished by the Disc-engine Company of Birmingham, and occupying a space, including the boiler, of only about twelve square feet, was exhibited by the same firm. This engine is not mounted on wheels, but requires neither masonry nor any kind of foundation for fixing it.

Mr. Cambridge, of Market Lavington, Wilts, produced a very complete portable engine, with boiler, on four wheels. This engine, of about four-horses' power, is of the vibrating or oscillating kind, and did great credit to the maker, from the simple arrangement and good workmanship of all its parts. It was connected with a thrashing-machine from the same workshop, conveyed about separately.

Mr. Alexander Dean, of Birmingham, exhibited a portable engine, in connexion with his flour-mill, and intended for the general purposes of the barn; but as it was not shown in action its qualities could not be ascertained.

In order to be able to decide on the particular merits of the three first-named engines, as well as of some powerful chaff-cutters, and Mr. Crosskill's portable saw-mill, the judges attended at Frenchay, the seat of Mrs. Rooke, who very obligingly permitted these trials to be conducted on her premises. Both Messrs.' Ransome's and Mr. Cambridge's engines performed their work of thrashing in a satisfactory manner; and the small disc-engine proved itself to be sufficiently powerful to drive at full speed a three-horse thrashing-machine. The judges, in consequence, awarded to Messrs. Ransome a prize of 30*l.*, and to Mr. Cambridge the sum of 15*l.* They consider it questionable whether the substitution of steam for horses, as the force employed to move portable agricultural steam-engines from place to place, will be found either more convenient or economical; they cannot, however, but highly commend the simplicity and effectiveness of the machinery applied by Messrs. Ransome to accomplish this purpose. The engine travelled along the road at the rate of from four to six miles an hour, and was guided and manœuvered so as to fix it in any particular spot with much ease; it turned also in a very small compass.

Portable Saw mill.—Mr. Crosskill's portable saw-mill is to be commended as an implement adapted for the use of gentlemen having much light timber to cut up into rails, or for other uses, and seems to be well calculated, when driven by the portable steam-engine or horse-power, to economise labour and the cost of transport on a large wooded estate. The saw is of the circular kind, and the machine is furnished with a grindstone, and with augers to bore holes, all moved by power.

Chaff-cutters.—The show-yard abounded with excellent chaff-cutting machines, of all sizes, fashions, and capabilities. Three, of the most powerful description, were selected for trial in connexion with the steam-engines; but as the judges could not discover any marked improvement over those produced and reported upon at the Liverpool meeting, to justify the singling out of any one of them for the Society's prize, it was not assigned. A premium of three pounds was adjudged to Mr. James Richmond, of Salford, for a small chaff-engine, of a novel and peculiar kind, patented by Mr. Worth, an American. The action of this machine is perfectly continuous, the cut being produced by the pressure of straight-edged knives, fixed at equal distances asunder, on a bottom roller, in the direction of its length, and working against an upper roller composed of a mixture of lead and zinc, between which the straw or hay is drawn in a regular stream. In principle, this machine may be considered to be diametrically opposed to that which has hitherto guided mechanics in the construction of chaff-cutters; but as it appeared to be worked with remarkable ease, and to cut with a cleanness never yet excelled, or, perhaps, equalled, it was deemed to be entitled to reward, and to the favourable notice of the Society. At present, the maker seems to have limited the dimensions of the machine to suit the demands of small consumers: experience will determine whether the same principle can be extended to meet the wants of the large farmer, and whether, in respect of durability, it equals the better-known machines.

Chaff-cutters, now in universal use, have so largely partaken of the attention and skill of mechanicians, that the task of deciding on their respective merits is become far too difficult for any judges whose time is restricted to the short period allotted to the examination of the society's show-yard, and whose attention is demanded by such a vast assemblage of implements. The quality of the work done can be tolerably well appreciated in the yard, but the quantity performed in a given time, and with a given force—upon which facts a decision as to economy, and the most effective construction, must be grounded—can only be ascertained by trials of sufficient length and exactness.

SIX LETTERS ON THE CURRENCY.

BY A COUNTRYMAN.

No. 1.

"Hic vivimus ambitiosa,
Paupertate omnes."—JUV. Sat. iii., 182.

"The face of wealth in poverty we wear."

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—The all important subject of the currency has engaged the attention of many well-informed and experienced men, who have sent forth their particular views to the world, from time to time, on this seemingly intricate question, either through the daily press, the various periodicals of the day, or by publications of their own; and it may, therefore, seem to be something like tautology to write anything further on the subject. I am, however, induced to do so from a *firm conviction* that nearly all the present wide-spread misery and distress from the Land's End to John o'Groats (and which pervade nearly all classes in a greater or less degree), are attributable to the *money laws* of this country; and as I have read many of the pamphlets that have of late years emanated from the press, I am of opinion that something of a simpler kind is wanted, and more adapted to the capacities of the middle and productive classes of society; although I can bear my testimony to much valuable information that has been communicated to the public by these means. It is probable I may not have much that is new to communicate, as I am but

"A gatherer and disposer of other men's stuff;"

but it may be useful to collect and compress much (which in my opinion is valuable) from the writings of different authors, and yet dispense with what does not so immediately bear upon the question; as I have found from experience that there is so much ignorance or misapprehension on the subject itself, that there is no disposition on the part of the public generally to peruse long and prosy articles of this character, however well they may be written. My aim will be, therefore, to simplify (as much as I can) the various arguments I shall have occasion to introduce in support of my own particular views, and to confine the whole within such a space as will be likely to secure their being read. I presume there are very few persons to be found hardy enough to deny the existence at the present time of almost unparalleled distress, and want of the necessaries (not to say the comforts and luxuries) of life by a great majority of the people of these realms; and such being granted, it is equally certain there must be some cause for it; and that cause I trust I shall be able to show is almost (if not entirely) owing to the operation of the currency laws of this country: and having so done, it will be my next endeavour to point out as clearly as I can, what are the best means to be pursued by the Government of the country to restore that degree of prosperity to which we have so long been strangers. To carry out my views a little in the order of time, I will go back to the commencement of the war in 1793, at which time our National Debt was 236,064,743*l.*, and the taxation of the country at the same time was 17,170,400*l.* In the fifth year of the war (viz. 1797) the National Debt increased to 364,375,767*l.*, and 4,000,000*l.* were added to the amount of our taxes; and in this eventful year an enormous loan of 32,000,000*l.* was raised. In the preceding year (1796) 18,000,000*l.* of specie were drained from the country in consequence of a bad harvest in 1795, which caused large importations of corn, together with subsidies to Austria, when the price of gold rose to 4*l.* 2s. per ounce. The Bank, in consequence of this state of things, contracted its money accommodations in proportion, which brought on commercial embarrassments, and with them an enlarged demand for money payment, and the Bank being unable to meet its demands for gold, an order in council was issued on the 25th February, 1797, by which cash payments of the Bank were suspended; this important step was taken by Mr. Pitt, to enable him to carry on the expensive wars in which this country was at that time unhappily engaged, and without which the enormous sums of money required could never have been raised. In allusion to this subject, the late Sir Robert Peel (father to the Premier) in his letter to the members of both Houses of Parliament, in 1826, and to which I may have occasion again to refer, says, "Whilst directing the energies of state in war, Mr. Pitt evinced equal ability in discovering, improving, and applying our internal resources. The war drained the country of its specie, and our enemies entertained sanguine hopes that our ruin would sooner be effected by want of pecuniary means, than the want of courage, discipline, and conduct in our armies. Mr. Pitt was more than a match for all contingencies. With the aid of the Bank of England, and other opulent houses, the energies of Great Britain were maintained in full activity, and the importance and utility of paper money were clearly established. Ingenious machines were introduced into our manufactures, and the encouragement and protection afforded them, greatly increased the demand for our goods, both at home and abroad. Our superiority at sea gave our merchants easy access to foreign markets, and the wealth derived from trade and commerce (though to some persons it may appear paradoxical), more than covered the whole expences of the war. When the Minister had recourse to loans they were speedily raised by British capitalists, and the increase of the public debt was due *from ourselves to ourselves*, and resolved itself into a family account without impairing the national property." The 3 per cent. Consols were at one time, in 1792, as high as 96; but after the extraordinary occurrences to which I have alluded, they sunk in January 1798 to 47⅜, the lowest price to which they have ever fallen. I am *no advocate* for an *unrestricted* paper issue, as the effects of such extensive changes are productive of *much evil*, though to some individuals a source of great aggrandisement of wealth in a very short space of time. As an instance of which I find, that in 1799 fine Jamaica coffee rose from 70s. to 196s.; West India and American cotton from 1s. to 5s.; Cochineal from 12s. to 54s.; Carolina rice from 14s. to 40s.; and Jamaica sugar from 38s. to 87s. These quotations clearly show how very rapidly and sensibly the prices of commodities of all kinds are affected by an expansion of the currency, and consequently on a contraction (especially a sudden one) the effect would of course be *vice versâ*.

I am, Sir, Yours respectfully,

November 5th, 1840. A COUNTRYMAN.

No. II.

SIR,—After the passing of the Bank Restriction Act, in 1797, the circulation of bank notes rose from 9 to nearly 30 millions, which will easily account for the extraordinary rise in the prices of various articles of import, as stated at the conclusion of my former letter; and in 1800, the depreciation in the currency began by being from one to two per cent. yearly increased (as indicated by the foreign exchanges), till at the close of the war in 1814, it reached nearly 30 per cent.; and a writer on the currency has observed, that "a metallic currency at the close of the war, at a standard conformable to the value of our money, as indicated by the foreign exchanges, on an average of the three preceding years (about 25 per cent. below our present standard) would have prevented much of the distress which followed." It was not, however, till 1819, when the bill for the resumption of cash payments (perhaps better known as "Peel's Bill," from having been introduced by the Right Hon. Bart., at the head of her Majesty's Government) passed into a law, by which our metallic currency (agreeable to the standard at which it subsisted at the period of the Restriction Act, in 1797) was restored, and gold, instead of Bank of England paper, again became the lawful money of Great Britain, at which time the value of our money was from 15 to 20 per cent. lower than in 1792. From 1803 to 1816 the quarterly average of bills and notes, under discount by the Bank, seldom fluctuated below 10 millions, generally as high as 13, and in 1810 exceeded 20 millions. The late Mr. Leatham, (a banker at Wakefield, to whose pamphlet on the currency I am indebted for much valuable information), says, "that in the last six months of 1839, the Bank of England discounted bills to the amount of 40 millions sterling, with a loss of only 500*l.*! This fact speaks volumes for the soundness and healthy state of our paper currency, and the same intelligent individual (who was the first to call public attention to this important branch of our currency) estimated the average amount of bills of exchange in circulation at one time from 1824 to 1827, in England and Scotland alone (exclusive of Irish and foreign bills) to be 102 millions sterling; but at the time he wrote (1840) supposed them to be much greater! The circulation of country bank paper in 1813-14 was 22,600,000*l.*, and in 1816 was reduced to 15,000,000*l.*, but in 1818 increased to 20,500,000*l.*, and again in 1822 (in consequence of the resumption of cash payments, agreeable to the provisions of

Peel's bill of 1819) was compressed to within 8,000,000*l.*, but partly owing to the severe distress amongst the agricultural classes in 1821 and 1822, the prices of grain on the week ending 21st December, in the latter year being as under: – Wheat, 38s. 8d.; barley, 29s. 4d.; oats, 18s. 9d.; rye, 23s. 6d.; beans, 28s. 10d.; and peas, 29s. 4d., which (according to the scale framed for the farmers' protection) should have been—for wheat 80s., barley 40s., oats 27s., rye 53s., beans 53s., and peas, 53s. Mr. Enderby (a merchant in London), in his able work on the currency, reckons the price of wheat in that year at 43s. (probably alluding to an earlier period of the year). He remarks, "in that year of national distress (1822) wheat was at 43s. per quarter, and yet the low price of corn did not improve trade, neither did the labouring classes consume more animal food, as is evident from the price of meal having fallen to a greater extent than did corn." As a contrast between the prices under a paper and a metallic currency, the same intelligent writer says, "in the year 1812 the price of bread corn averaged 122s., and at one time of the year rose to 125s. per qr.; but this was also a period when our sacrifices, both of men and treasure, were carried to an extent never before known in the annals of the world, and yet *no distress* was experienced by the labouring classes." I presume he here alludes to the *agricultural labourer* more particularly, for another writer says, "in the five years from 1808 to 1812, the harvests were very deficient, and in the month of August, in the latter year, the average prices were, for wheat 155s., barley 79s. 10d., and oats 56s. 2d.;" and Mr. Tooke says, "that in Mark Lane, in this year, the finest Dantzic wheat fetched 180s., and oats, in one or two instances, were sold at the enormous price of 84s. the quarter." The first-named writer observes, "that the workmen employed in manufactures at this period experienced severe distress in consequence of the high price of provisions." In the following year, 1813, in consequence of an abundant harvest, wheat fell to 73s. 6d., and after that of 1814 (which was rather favourable than otherwise) the average price was reduced to 53s. 7d. the quarter. A striking instance of the effects produced by the expansion of the currency in 1797, by the passing of the Bank Restriction Act, is exhibited in the fact that after that period Bank Stock rose from 100*l.* to 295*l.*, paid 10 per cent. to the proprietors from 1807 to 1823; from that time to 1839, 8 per cent.; and subsequently only 7 per cent. Since the resumption of cash payments the stock has fallen to 175*l.*, and even latterly still lower; and at the last half-yearly meeting the directors were unable to pay their dividend of 7 per cent. without intrenching upon their rest or reserved fund. The trading capital of the Bank, known by the name of Bank Stock, formerly amounted to 14,553,000*l.*, but since the last renewal of the charter in 1833 to only 10,214,950*l.* The amount due to the Bank from the Government (which has been advanced at different times to the public, and for which the Bank receives interest at the rate of 3 per cent.) amounts to 14,686,800*l.*! Another important source of income to the Bank is derived from an annuity (commonly called the dead weight), which amounts to 585,740*l.* paid every year by the public, and to be so paid till the year 1867, in consideration of advances to the amount of 13,089,419*l.*, made by that establishment between the years 1823 and 1828 (both inclusive), for the payment of the pensions to naval and military officers, which had become due at the close of the war in 1814. By this arrangement a portion of the burden of these pensions, which in 1814 amounted to nearly five millions per annum, is, as already explained, spread out over a considerably longer period than that to which it would otherwise naturally have been confined, and its pressure upon the more limited space lightened accordingly.

I am, sir, your's respectfully,

November 12, 1842. A Countryman.

No. III.

Sir,—The annuity (commonly called the dead weight), as explained in my last letter, granted to the Bank by the Government, was one amongst other expedients adopted in consequence of the altered state of things, to enable them to reduce the taxation of the country, which at the close of the war had swelled to the enormous sum of 70,403,448*l.*, from 17,170,400*l.*, at which it stood at the commencement in 1793; and the National Debt had also increased during the same period from 236 to 800 millions: the loans during the last three years of the war, 1812, 13, and 14, having averaged upwards of 47 millions. The remission of taxes in that year of national distress before alluded to (1822) amounted to 18 millions, but still the pressure (although so much reduced) is yet severely felt. In consequence of a great drain for gold in 1825, to the amount of 7 millions sterling, and from the Bank being compelled (as on many subsequent occasions) to lower prices in order to turn the exchanges, and make it *unprofitable* to export bullion, resorted to what is technically termed, "putting on the screw" (a term well understood in Lombard Street); the consequence of which was, towards the end of the year a most dreadful panic was produced, which spread the greatest consternation and alarm through the whole extent of the country, and brought the Bank to within twenty-four hours of a state of barter—indeed, they were compelled to return to the issue of 1*l.* notes to save themselves from stoppage. The severity of the shock continued through the early part of 1826, and almost every man in business seemed frightened at his own shadow. In allusion to this time, the late Mr. Leatham (to whose work I have previously referred) says, "In the panic of 1825-6, Exchequer Bills and Consols were unsaleable for a short period at any price, and had the Bank suspended payment, all securities would have become for a time valueless and unsaleable." How literally has the prediction of the late Mr. Rothschild (in the following evidence given before the Committee of the House of Commons, on the expediency of the Resumption of Cash Payments by the Bank of England) been fulfilled, a man who was unequalled in talent as a financier, and whose advice ought to have been taken.

"Through the medium of the war, which continued for twenty years, we have had paper currency. It has given facilities to the war, and to every business on that account; everything has gone smooth; but if you begin to pay in specie, every article will fall so much, that there can be no loans. People will be obliged to look first at home, and to think of themselves before they can send anything abroad.

"Question. What do you think would be the effect upon the public of a further reduction of from 2,000,000*l.* to 3,000,000*l.* of the amount of Bank notes, beyond that which has taken place, it now being understood to be 25,000,000*l.*?

"Answer. It would make money very scarce, and it will create a great many bankruptcies, and do serious injury: it will have an effect upon almost every article in the country, if 3,000,000*l.* of Bank notes are taken out of circulation.

"Question. What would be the effect of such scarcity of money upon the manufacturers of the country?

"Answer. It would be a ruin to the country, in my opinion, if it is done too fast—if it is done all at once.

"Question. Do you mean, by ruin to the country, ruin to the manufacturers?

"Answer. I mean ruin to the country, any one who is connected with any commercial concerns; not the manufacturers alone, but in every branch; it will be like an electrical machine, it will shake everything."

From a continuance of the same system of currency the same results have followed, at subsequent periods, whenever a drain upon the Bank for bullion took place to such an extent as to cause the "screw" to be again put on; and without alluding to every instance, I will now refer to the year 1839, when the bullion in the Bank ranged in about ten months from 9,336,000*l.* to 2,522,000*l.*, and the Bank advanced their rate of discount to 6 per cent. (and which amongst many bankers and bill brokers rose still higher), a circumstance unprecedented in modern times. It was in the last six months of this year, when the Bank discounted so very largely, as I have before stated; and it was in reference to this period the late Mr. Leatham makes the following astounding statement. "In the early part of 1840, the stock of bullion in the coffers of the Bank amounted to 3½ *millions* sterling, of which sum 2½ *millions* had been borrowed from the Bank of France! The following amounts were then *liable* to be called for in gold:—

7	millions,	Bank deposits (as returned)
17	,,	Bank notes ,,
12	,,	Country notes ,,
5	,,	Country notes (estimated for Ireland and Scotland)
22	,,	Savings Bank deposits
20	,,	Country ,,
135	,,	Bills of Exchange

218 millions sterling! to which add 17 millions Exchequer Bills, which have been truly called the promissory notes of the Government." The same writer estimates "the total amount of Bills of Exchange, inland and foreign (the latter one-sixth of the former), in circulation in the whole of 1839 at 528,493,842*l.*, and the amount of bills *out at one time* to be 132,123,460*l.*" Whilst upon this part of my subject, I may state that I believe it is an undoubted fact, that when application was made to the Bank of France for the loan of the 2 or 2½ millions by the Bank of England, the governor of the former establishment enquired of the then minister of the day, whether it would answer any political end if he were to refuse the application, and compel the Bank of England to suspend its payments. Fortunately for them, he was answered in the negative: but had it occurred at a little later period, during the administration of M. Thiers, there is no doubt they would have had a refusal. How *degrading* and *humiliating* for this boasted great and wealthy nation thus to become a suppliant to a fallen foe! and all for what? but to uphold a system that is destroying the very vitals of the country. It may not be amiss here to allude to the various shifts that have of late years been resorted to, to give relief to the country when almost driven to despair. The three principal ones are, the act for making Bank of England notes a legal tender in all places except at the Bank itself; the repeal of the usury laws; and the establishment of Joint Stock Banks, all of which have had that tendency to a certain extent, under our present restrictive system. But although I am willing to bear honourable testimony to the great utility, the great security to the public, and the excellent management of many of the latter establishments, yet on the other hand I am bound to say, that great evil has arisen to many innocent persons from their connection with Joint Stock Banks, where the management has been placed in the hands of persons totally unqualified to fill such situations, and utterly ignorant of the first principles of banking. I will quote one or two instances to bear me out in what I have asserted. The capital of the Northern and Central Bank of England, which failed in 1836, lost nearly the whole of its capital—700,000*l.* The Imperial Bank of England (formed on its ruins) afterwards failed, and many of the shareholders were not able to pay 1s. in the pound. One advance was made to a Lancashire firm as high as 270,000*l.* A firm at Stockport and another at Manchester failed in 1839, and owed their bankers (Joint Stock, of course) the enormous sum of 600,000*l.*; and last (though not least), the Bank of Manchester has just failed, and obliged to wind up the concern, having lost the whole of its capital, and 16,000*l.* beyond, making together 800,000*l.* I am, Sir, yours respectfully,

November 19, 1842. A COUNTRYMAN.

ON DRAINING AND SUBSOILING.

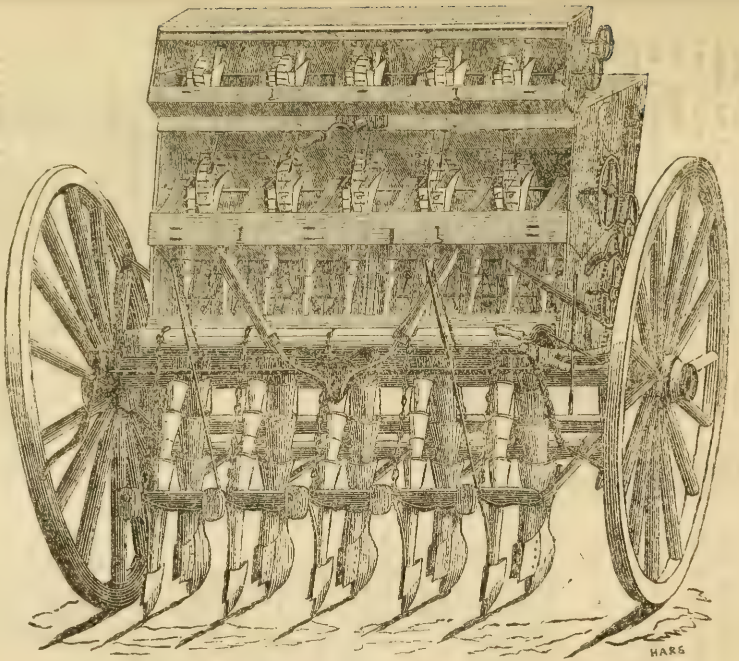
SIR,—I have read an article in your last number signed "A Yorkshire Farmer," and as the author invites further discussion on the subject, I hope I am not intruding when I state the result of my own system. My farm consists of the strongest clay soil. Ten years ago I made some cross water drains sixteen inches deep, and filled with tiles, but no soles. I have found the results of this plan very inefficient; in short, it has done no good. I am now going over the land again. I have cut the drains 30 inches deep in parallel lines on the Deanston plan, at 21 feet apart, and filled them withs tile and no soles. They draw uncommonly well. Some have been cut four years ago, and the land subsoiled with Wilkie's plough (a very heavy one) across the drains. The land is quite altered for the better and the crops nearly double. In cutting these deep drains I came across the old ones. I found the tiles clean and perfect, and not the least imbedded in the clay; however, in cutting drains in soft ground, whether the drains are filled with stones or tiles, I always put slates underneath, and they answer exceedingly, and are cheap in this country. They are shaped for the purpose at Col. Pennant's quarry. I also quite agree with the "Yorkshire Farmer" that the subsoil plough should only be used in dry weather. I always begin as soon as the harvest is over.

I am, Sir, your obedient servant,

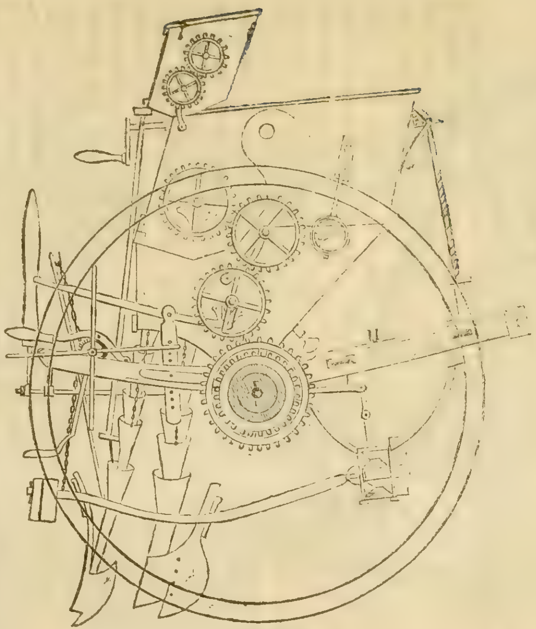
AN ANGLESEY FARMER.

DRILL FOR GENERAL PURPOSES,

By R. GARRETT & SON, Leiston Works, Saxmundham, Suffolk.



Drill for General Purposes.



Side View.

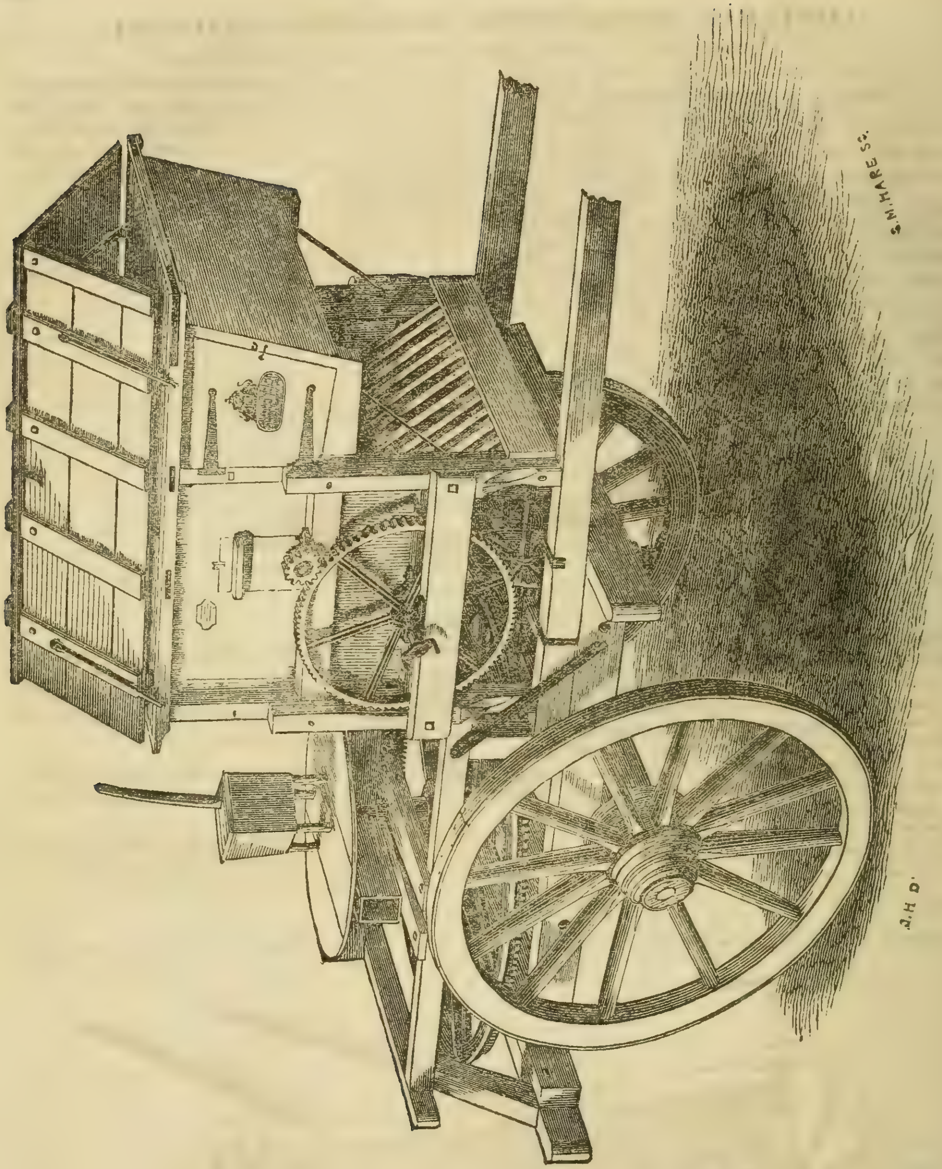
N.B.—R. G. & Son have received the following Prizes for their improvements in Drilling Machines, viz.—

That of the Roy. English Agricultural Society, at Cambridge, 1840 ..	£10
That of the same Society, at Liverpool, in 1841	10
That of the same Society, at Bristol, in 1842......................	20
That of the East Norfolk Agricultural Society, in 1842	4

The patentees and manufacturers of this implement, whose study it has been to render it as perfect and as useful as possible, have great pleasure in announcing that they have lately made several important improvements, which more especially refer to its manuring and seed-sowing purposes, and they now confidently present it as an implement combining the utmost economy with complete efficiency. The general utility of this implement is to perform, in one process, manuring, corn, and grass-seeding, which is accomplished in the following manner:—Corn and manure may be deposited together down the same conductors, or through separate coulters, rakes being provided to cover the manure with mould, upon which the seed is deposited. The seed-engine accompanying this drill is adapted to sow at the same time with spring corn and manure, or may be used as a separate implement for grass-seeds, broad-cast, or turnips and mangel-wurzel, in rows, either with or without manure.

The patentees would call the particular attention of their agricultural friends to the following important additions in the construction of their improved drill, viz., a double action stirrer is introduced into the manure department, having a perpendicular, and also a revolving movement, by means of which the manure (which, in the drills hitherto in use, has frequently clogged and hung back in the manure-box, so much so, as to require the attendance of a man to prevent it) is, in this, constantly disturbed and pressed forward into the departments for the depositing barrel, and causing an equal distribution, in exact quantities, of the most difficult, coarse, or badly-prepared manures.

In the working of the seed-sowing engine, as before constructed, the difficulty which has hitherto presented itself of mixing together the heavier with the lighter seeds, the heavier has, by the motion of the engine, been shaken to the bottom of the box, being thereby sown in very unequal proportions. To remedy this, the small heavy seeds, such as clover, trefoil, &c., are delivered from cups, while the lighter grass-seeds, such as rye, grass, &c., are, by the same operation, brushed out of a separate apartment of the box, down the same conductors with the other seed. This easy and simple method, whereby the required quantities of each seed are nicely mixed, and evenly sown all over the land, deserves particular attention, and is regulated by merely turning the screw at the end of the box, for rye, grass, and changing wheels on the cup-barrel for clover, &c.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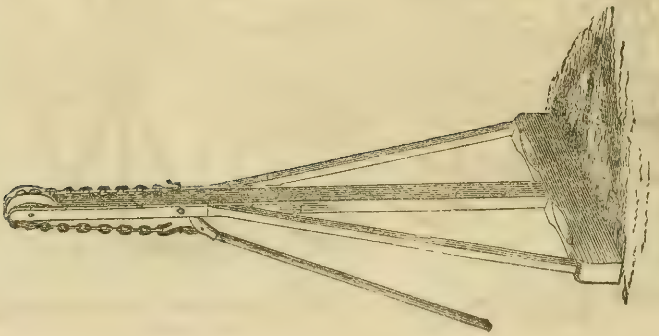
Machine Loaded for Travelling.

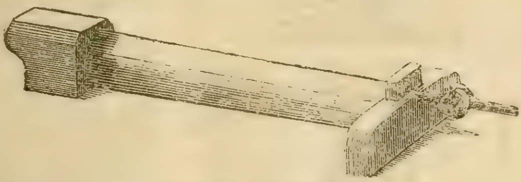


Improved Lever Purchase.

PORTABLE HORSE-POWER THRASHING MACHINE,

By R. GARRETT & SON, Leiston Works, Saxmundham, Suffolk.

R. G. & Son have perfected so many important improvements in the portable horse-power thrashing machine, that it is really worthy the attention of agriculturists for its accelerative powers, nicety of work, and saving of horse-labour; for, by allowing the draught-horses to walk their own natural slow pace of two miles per hour (which is about three rounds per minute), it will thrash perfectly clear any kind of corn, with four horses, as much as sixty imperial bushels per hour, without injuring the kernels or breaking the straw to pieces. And by merely substituting another concave, which is provided to surround the drum, with only one or two horses, will effectually draw clover, suckling, or any other small seeds. It is so portable that two men may set it down or take it up in half an hour, and two horses will remove it easily from place to place. The most recent improvements which the manufacturers have made in this machine, and which give to it a superiority over all others, are as follow:—The iron-rimmed horse-wheels turned perfectly true in a lathe, on both sides, to admit of toothed segments of eight parts, so that, when the teeth are worn or accidentally broken, one, or any number of parts, may be replaced by the attendant of the machine, without a mechanic. The drum is made entirely of iron, with five beaters, peculiarly formed of wrought iron, extremely light and strong, occupying less than the space of four wood beaters, thus giving one-fifth more thrashing power without increased speed or friction, and the concave, which surrounds the drum, being also of wrought iron ribbed plates, are much less liable to breakage, and are more readily repaired.



The Cover for Leading-bar.

There is a bridge or cover for the leading bar, that the horses may step over without a possibility of injury, and being moveable, and attached only to the horse frame with hooks, this addition is particularly essential when the barn-floor, upon which the thrashing power stands, lay higher than the horse-walk. Another advantage is, a stage to fix perpendicularly upon the thrashing power, so as to keep all loose ears of corn from falling amongst the thrashed corn or straw. An arrangement is also made for attaching the leading bar to either side of the thrashing power, so as it may be worked with equal convenience from either side of the barn or stack.

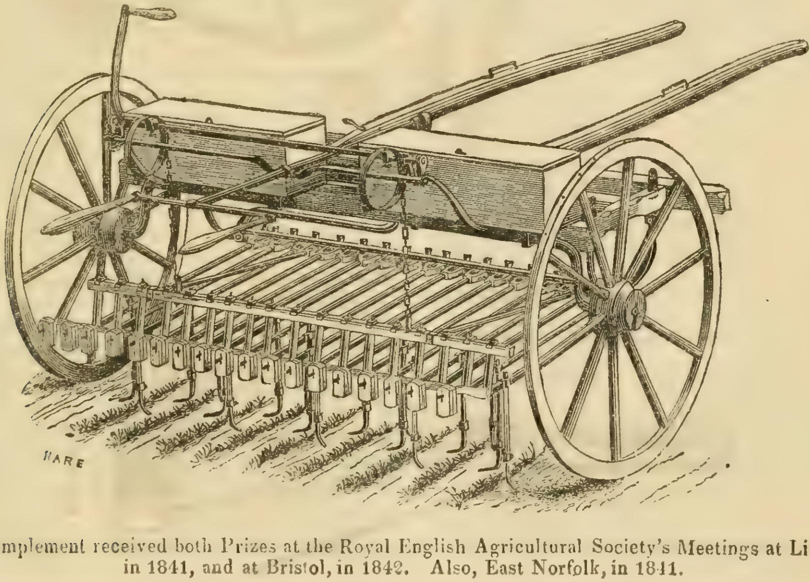
The instrument for loading and unloading is a lever purchase, readily applied and managed by one man, and extremely portable.

N.B. These machines, in every instance where they have been put in competition for prizes, have obtained awards, viz.:—

South Devon Agricultural Society, at Exeter, in 1839.
Northumberland ditto, at Newcastle-on-Tyne, 1841.
East Norfolk ditto ditto, at Norwich, 1842.

PATENT HORSE HOE,

Invented by the Manufacturers, R. GARRETT & SON, Leiston Works, Saxmundham, Suffolk.



This Implement received both Prizes at the Royal English Agricultural Society's Meetings at Liverpool, in 1841, and at Bristol, in 1842. Also, East Norfolk, in 1841.

This Implement is so complete in itself, as to be fully suited to all methods of drill cultivation, whether broad, stetch, or ridge ploughing; and is adapted to hoeing corn of all sorts, as well as roots. The peculiar advantages of this implement are as follows:—

It may be increased or diminished in size to suit all lands or methods of planting; the axletree being moveable at both ends, either wheels may be expanded or contracted, so as always to be kept between the rows of plants.

The shafts are readily altered, and put to any part of the frame, so that the horses may either walk in the furrow, or in any direction to avoid injury to the crop.

Each hoe, or each pair of hoes, works on a lever independent of the others, so that no part of the surface to be cut, however uneven, can escape; and in order to accommodate this implement for the consolidated earth of the wheat crop, and also the more loosened top of spring corn, roots, &c., the hoes are pressed in by different weights being hung upon the ends of each lever, and adjusted by keys or chains to prevent them going beyond the proper depth. What has hitherto been an insuperable objection to the general use of the Horse Hoe is overruled in this, by the novel and easy method of steering, so that the hoes may be guided to the greatest nicety, if common caution be used, doing every execution among the weeds without injury to the crop.

This implement is so constructed, that the hoes may be set to any width from 6 inches to any wider space; for the purpose of hoeing all kinds of corn, the inverted hoes only are preferred; but for the root crops, where the rows of plants are wider (say 16 inches or more), an extra hoe of a semicircular form is placed on a separate lever, working between and in advance of the two inverted hoes, for the more effectually cutting all the land, however uneven the surface, by the three separate hoes working independently of each other between the rows.

The hoes are of peculiar improved manufacture, the blades being of steel, made separate, and attached to a stalk in a simple and easy, yet effectual manner, so that any husbandman may replace them, and being manufactured by the Patentees at an exceeding low price, no difficulty can arise in replacing those parts subject to wear.

The frame to which the levers are jointed is raised or lowered by the different holes in the ends of the parallel irons on which they swing, so that the hoes are kept in a proper cutting position, whether the wheels are running on level lands, or in the furrows of stetch or ridge ploughing.

Directions for placing the Hoes.

Two $4\frac{1}{2}$-inch inverted hoes for rows 8 to 10 inches apart.

One $4\frac{1}{2}$-inch and one 7-inch inverted hoe for rows 10 to 12 inches apart.

Two 7-inch inverted hoes for rows 12 to 15 inches apart.

Two $4\frac{1}{2}$-inch inverted hoes and one semicircular hoe for rows 15 to 19 inches apart.

Two 7-inch inverted hoes and one semicircular hoe for rows 19 to 24 inches apart.

Two ridging hoes and one semicircular hoe, to do ridges 24 to 30 inches apart.

PROPOSAL FOR ESTABLISHING A FARMER'S CLUB HOUSE IN LONDON.

The want of a Club House in London, at which Farmers from different parts of the country, when visiting the Metropolis upon business, might meet each other, and where those who have long known each other by name, and perhaps have been in correspondence with each other, might become personally acquainted, has long been felt. The subject was brought under the notice of the committee of the British Farmer's Club, in December, 1840, and was highly approved. Several attempts have been made to effect the object, but a serious difficulty always interposed in the outlay of capital requisite for the formation of such an establishment; a plan has, however, been devised, by which that difficulty is completely overcome.

Each succeeding year furnishes fresh proofs of the necessity of union amongst farmers, and it behoves them to adopt the means pursued by the other classes of society to associate with each other, as well for the purpose of mutual information and improvement, as for the general good of the body. The establishment of Farmers' Clubs, which are daily increasing in number, renders it highly desirable that there should be some central point to which, and through which, they may intercommunicate with each other; to effect this, is one of the objects contemplated in establishing a Farmers' Club House in London. The entrance fee and subscription will be *extremely moderate*, so as not to be an object of consideration, and for which members will enjoy commensurate advantages.

Believing that the establishment of a Farmers' Club House in London would tend to elevate the position of the agricultural class, and afford additional means of improvement in agriculture, by facilitating the intercourse of those who are engaged in its pursuit, we do not hesitate to call upon farmers to give this object their support. A provisional committee, consisting of upwards of thirty leading farmers and others interested in agriculture, has been formed, and a meeting will be held in London on the 8th December, preparatory to a general meeting, to be held at the City of Hereford Arms, opposite the entrance of the Bazaar, in King-street, Baker-street, Portman-square, where the Smithfield Club shew is held, at ten o'clock on the morning of Friday, the 9th December. We trust that such farmers as may be in London on that day, and are favourable to the object, will attend the meeting, as the nature of the support then given will influence the future proceedings of the provisional committee, which has been formed for the purpose of ascertaining how far the object is one which will meet general approbation. We shall be happy to receive communications upon the subject from any person who may be favourable to the proposition, and will take care they are placed before the provisional committee.

NEW THEORY OF THE ACTION OF AZOTE.

ON THE IMPORTANCE OF AZOTE TO AGRICULTURE—ITS PROPERTIES AND MODES OF ACTION.

BY EDWARD ADDISON.

Till within the last few years, the existence of azote in plants having been almost entirely overlooked, comparatively little appears to be known of its properties and modes of operating. Agriculturists have long known substances, which are now found to be abundant in azote, to exert a powerful and beneficial influence on vegetation, and to be the most valuable of manures; yet the cause of that influence, with the manner in which it is exerted, has remained in a great measure a mystery. This gas must have an office to perform in plants, and an office too which must be of the utmost importance, inasmuch as it is found by experience and experiment, that vegetation cannot proceed when it is entirely absent. This being the case, it must be of importance for us to know what the part is which it takes in the production of vegetables, as this knowledge may be calculated to lead us to a better acquaintance with the treatment which plants require. Several of our modern agricultural writers have written a great deal on agricultural chemistry and chemico-physiology, without touching on this point; while some have drawn conclusions concerning it, which are not at all consistent with the known laws of vegetable physiology, chemistry, and the facts which have been established by observation and experience.

In proceeding with this essay it is necessary to notice the four principal and ultimate elements of all plants, which are found to be oxygen, hydrogen, carbon, and azote (nitrogen), all of which are absolutely necessary to vegetation. These elements enter into the composition of plants, under various combinations, the principal of which are as follow: one part of oxygen, with about three times its weight of azote, forming the air of the atmosphere; one part of oxygen, with one eighth of hydrogen, water; one part of oxygen, with nearly one third of carbon, carbonic acid gas; and one part of hydrogen, with five of azote, ammonia.

Atmospheric air, the first of these compounds, is an important ingredient in the formation and growth of plants, both as regards acting within and around them. It is the vehicle by which carbonic acid gas is supplied, and for the production of healthy plants it is necessary that it should exist freely, both in the surrounding atmosphere and the soil, for they cannot flourish, either in water or soil, where there is a want of oxygen. Hence the beneficial effects which must result from frequently ploughing and lightening the soil, so as to favour the admission of a large quantity of air. A deleterious effect will also result from the air being too freely charged with carbonic acid gas; which, however, is never the case in the atmosphere, provided the air is free from confinement, its over abundant increase being prevented by counteracting influences.

Water being a powerful chemical agent, it forms a very important part in agriculture, not merely by affording moisture, but for the preparation of substances for assimilation, and as a solvent and vehicle for compounds which perform an important part in the production and growth of plants. It is capable of absorbing about its own bulk of carbonic acid gas, or about a five-hundred-and-fortieth part of its weight; also of absorbing four hundred times its bulk, or about one-third of its weight of ammonia, besides many substances necessary to vegetation. It acts as a solvent to many organic substances, and as is well known, is a powerful agent in their decomposition, besides causing important changes to take place in many kinds of inorganic matter, which are necessary for agricultural purposes.

Carbonic acid gas is formed by animal respiration, and the combustion and decomposition of carbonaceous matter. It forms the nourishment and food of all plants. The plants assimilate the carbon, and restore again, in a state of purity to the atmosphere, the oxygen rendered unfit for animal respiration, by the processes which carbonize it. This gas is about one-half heavier than air, but so much more liable to expansion by heat that the temperature of a summer's day will make it lighter than the atmosphere, though exposed to the same degree of heat. This gas ascends to a great height, and is apparently diffused equally through the air, being found even on the top of the highest mountains.

Ammonia is the compound in which the azote (distinct from that of the atmosphere) is supplied to plants, and the form in which it generally exists in them. It may be obtained from all plants by distillation, and exists in some of them in such large quantities as to be easily appreciable to the sense of smell, and by some of them the fumes will be emitted strongly by being rubbed with a little strong alkali; this is the case with the common mushroom, and bark of cascarilla.

That ammonia should so frequently be the compound in which azote exists in plants, may be accounted for by the strong affinity which azote has for hydrogen; for, whereas we can only make azote enter into direct combination with oxygen by powerful chemical means, ammonia is formed during the most simple natural processes. Azote is found to be always given off in the form of ammonia during the fermentation of manure, and other substances which contain it. This compound is the active principle of farm-yard manure, decayed animal and vegetable matter, bones, rape-cake, and a multitude of other azotised substances. Upon the quantity of azote appears to depend the nutritious properties of food for animals; and these properties will generally be found to be in proportion to the quantity of this gas contained in it. Not that it is of itself an element affording nutrition to the animal system—for when administered alone it will be found quite the reverse—but because of its presence being required in a less or greater degree for the enabling of plants to assimilate food, according to the nutritious properties of that food which it assists in producing; therefore, with substances which supply animals with nourishment, it must always bear a close relation and connection. This will be perceived by examining the quantities of azote existing in different herbs, seeds, and animal matter, which will generally be according to their value as food. As for instance, oats contain more azote than turnips, wheat generally more than oats, and the fibrine of flesh and blood, albuminous and gelatinous substances, in proportion to their nutritious properties.

Though the proportion of azote contained in many vegetables may appear very small when given by weight, yet if we calculate it by bulk it will appear less insignificant. A grain of wheat, for instance, which contains by weight only ·23 per cent., or one four-hundred-and thirty-fifth part of its weight of azote, when taken by volume we find it to be a quantity of azote more than double the bulk of the whole seed.

Plants appear to be supplied with what is necessary for their production and growth by two different processes; one of which is simply mechanical, and may be termed suction, the other is more allied to chemical attraction and affinity. By the first of these, plants are supplied with moisture, and other substances necessary for them, which may happen to be in contact with the moisture absorbed, and for which water may act as a solvent. This process appears to be analogous to that which we see so commonly carried on in substances, in which a powerful absorption takes place, by means of one of their ends or lower parts being placed in water. This absorption may be seen by the ascent of oil which takes place up a cotton wick, merely by its lower end being placed in this fluid.

We thus see that water may be easily supplied to plants merely by their mechanical structure, assisted by the action of the air. The substances for which water acts as a solvent, and which may be supplied in sufficient quantities to plants in the above manner, are very numerous; the most important of which is azote in the form of ammonia, without which gas no crop can ever be produced. The vapour of ammonia being dissolved and absorbed by one four-hundredth part its bulk, or three times its weight of water, it can be supplied by the water absorbed by the plants, in sufficient quantities for the utmost exigences of vegetation, provided there be a sufficient quantity in contact with the water.

We have now got two out of the three great agents of vegetation, viz., water and azote, as existing generally in the form of ammonia. The next question is, in what manner, and by what cause, carbonic acid gas, the third agent in vegetation, is supplied to plants. It is evident that there must be a cause, for plants cannot be supplied with this essential and necessary of their existence without some agency which possesses a powerful influence upon the carbon of the atmosphere and soil; for not being capable of seeking and supplying themselves with food in the manner in which animals do, it is necessary that they should have some other means of obtaining what is necessary for their support. On examination of the means which they possess, and the nature of the food with which they are supported, the only apparent way in which they can be supplied with that food appears to be through the agency of attraction. The great question which now presents itself is what constitutes that attractive power. That the carbonic acid necessary for their growth is not supplied by the water absorbed by the mechanical structure of the plants is evident from the small quantity held in solution by water. Water being capable of absorbing only its own bulk of this gas, or about a five hundred and fortieth of its weight, it would require one hundred weight of it, with its absorbent powers satisfied, by being charged to its fullest extent with gas, in order to produce an increase of a single ounce of carbon. On taking the mushroom, which is remarkable for the rapidity of its growth, and supposing one weighing half an ounce to grow in a single day, during that period it would have to absorb about a gallon and a half of water, fully charged with gas, in order to produce its carbon. For a small mushroom to absorb this quantity of water, we know would be an impossibility. We find, therefore, that this gas cannot be supplied in any adequate quantity, through the medium of the water taken up by means of the mechanical structure of the plants; and we know that the carbon of plants cannot add to its own bulk, by any affinity which it has to carbonic acid, or that the atmospheric air, in which it floats, can be the attracting power by which it is supplied.

It, therefore, remains to examine the last of the ultimate elements of plants, which is azote, existing generally in the form of ammonia. Having a place in all plants, and being absolutely and indispensably necessary to their growth, it follows that it must have some very important office to perform. It is evident that it is not the food of plants, or necessary for the decomposition of that food, or cause of the separation of the carbon from the oxygen with which it is in combination; for this process is sufficiently carried on by other agency. Then, we must endeavour to find the part which it takes in vegetation, by an examination of its properties. Among the many remarkable properties which it possesses, one is, that it has a powerful affinity for carbonic acid gas. This is enough to explain its office, and to lead us to conclude that it must be that attracting influence which procures for plants the carbonic acid gas which they need; not that it only enables plants to attract the gas from the atmosphere, but that it is the attractive power itself.

In the plant, as quickly as the carbonic acid is attracted from the air, so quickly is the carbon separated from it, and the oxygen set free. By the oxygen being set free and the carbon condensed into a somewhat solid state, the action of the azote will not be hindered or destroyed by an accumulation of gas, but a part of it will be constantly at liberty, in order to exercise its attracting powers.

Ammonia is not the only substance which possesses an affinity for carbonic acid gas, for the same property, to a certain extent, is possessed by lime, potash, soda, and other substances, when a portion of any of them is exposed to the air. But these wanting the organic structure of the plants are incapable of separating the oxygen, and consequently they can increase but little in weight, for after absorbing a limited quantity they become carbonates, and their absorbent power is at an end. Some of this class of substances enter into plants; but in the organised structure they do not possess the properties, and are incapable of performing the offices of azote, which, in the state of combination in which it generally exists, is a very volatile substance, and easily separated from other substances with which it may be in contact. This may be shewn by the rapid separation which takes place, independently of the organised structure, when azote is in chemical combination with carbon and oxygen so as to form cyanic acid. When this compound is in contact with water, in a few hours the azote separates spontaneously from the carbon and oxygen, and combines with the hydrogen of the water, and forms ammonia. And if this decomposition takes place in so short a time spontaneously, we may infer that the separation of azote from carbon and oxygen, may be effected with great rapidity when brought under the influence of the powerful decomposing agents which are present in a living plant.

By the view which we have taken of the manner in which azote operates in plants, we find germination to be an exceedingly simple process, and which may be explained in the following manner. The seed (which contains all the four elements necessary to germination) being placed in a situation where moisture, air, and a sufficient degree of temperature are present, the moisture penetrates into the seed, and after a sufficient period of time has elapsed, fermentation and decomposition begin to take place. During these processes the carbon of the seed unites with the oxygen of the air which surrounds it, and forms carbonic acid gas. By the formation of this gas considerable heat is evolved, the temperature of the seed is raised above that of the surrounding substances, the hitherto latent power of the ammonia begins to operate, and to absorb what carbonic acid gas is necessary for the germination of the seed, or as much as it is capable of attracting, the rest being allowed to escape. The seed containing. as far as regards the mechanical structure required, what is necessary for the decomposition of this gas, the carbon is assimilated and appropriated for the purpose of forming the sprout, and afterwards the stalk and leaves. When this supply of food, which the seed originally contained within itself, and which it supplied to the newly formed plant, is exhausted, its food is then supplied by the carbon existing in the surrounding soil and the oxidized carbon of the air. From these last resources plants must be supplied with nourishment through every stage of their growth, after the first supply is consumed.

By experiment it has been found that as soon as the azote existing in seeds is exhausted by the first leaves, the plant will die, however abundant the supply of the carbonic acid may be. How are we to account for this? Simply by the fact that from the want of azote it is deprived of the power of absorbing the gas, and consequently can receive no nourishment from it. Professor Liebig, after giving the result of several experiments, says, "We may indeed conclude that the salt of lime acts as a poison, since the development of plants will advance further in pure water, when lime and carbonic acid are not used." But are we to conclude that because salt of lime sprinkled with water, will not sustain vegetable life so long as water itself, that therefore it acts as a poison? This conclusion would only stand good by considering water, as regards its power, as an agent for the supply of vegetation to be inert, and so taking water as unity, and considering those articles which prolong life longer than this fluid to be beneficial, and those which fall short of it as deleterious. But water, almost invariably containing some azote in the form of ammonia, from its power of absorbing this compound, it will consequently be capable of supplying it to vegetables. By this means the plant will be able to procure the carbonic acid gas contained in the air which surrounds it, and so be able to exist for a considerable length of time. But the salt of lime not supplying the plant with azote, the carbon which it contains cannot be absorbed, and consequently when the supply of azote is stopped, and that which the plant originally contained is consumed, the salt of lime will be of no more benefit as regards supplying them with food, than if it was removed to the distance of a hundred miles; and for this reason—because the plants have not power to absorb it for assimilation.

When plants are supplied with little azote, that little must be almost entirely occupied in the procuring of the carbonic acid, and consequently there will be little to spare in order to be expended by entering into combination with the solid, and newly separated carbon; and consequently there will be a large proportion of starch, but little of gluten, or of any other highly azotised substance. And, in all probability, when the supply of azote is large, and the carbonic acid in proportion, the plants will not be necessitated to take the coarsest parts of the food for assimilation, as will be the case with plants only half supplied with nourishment, but will draw principally the finer parts, and discharge that which is coarse and not particularly suited to their nature, among the substances which they eject by the roots. The fact that plants, and especially wheat, when supplied with a large quantity of azote, contain a larger per centage of gluten and nutritious matter than when supplied with little of this gas, has been established by observation and experiment,

One of the principal means which the agriculturist must use, in order to turn to his advantage all the carbon of the soil and atmosphere, is to supply to the soil a sufficiency of azote. An immense quantity of carbon by this means may be converted into corn, turnips, hay, &c., which would otherwise be lost; the carbonic acid of the atmosphere being a constant supply of carbon without any expense; therefore the farmer does not see his own interest, if he does not use all the means in his power to procure as much as every acre of the land which he possesses is capable (through the agency of azote,) of turning into vegetable produce. If the soil does not receive a proportionate quantity of azotised substance, the less carbon which is supplied to it the better, for instead of being beneficial, it will be merely an incumbrance to the land, and consequently a waste of manure; for when there is an insufficiency of azote, it can be of no benefit. This is the case with many soils which do not produce good crops, on account of being too rich—they generate an abundance of carbonic acid, without causing a good produce of vegetables; but if a larger supply of azotised substances be supplied to the carbonaceous soil, an abundant crop will be obtained, provided the unfruitfulness of the soil is not caused by the deficiency of some particular inorganic matter, as silica, potash, phosphates, &c.

Besides these evils which result from a deficiency of azote in soils, there is another way in which the agriculturist who does not manage his land well, will labour under serious disadvantages. If azote be deficient in the soil, it is certain that the crop which it produces must be the same. It is evident that there will be a deficiency of it in the corn, straw, hay, turnips, and other produce which he reaps from such land. Passing over the want of nourishment which from this cause his crops must afford to the live stock which he has to keep, it must be remembered that his farm-yard manure must be of little value. If part of the corn, with the hay and straw, which, after being used, eventually goes back to the land, contain little azote, the manure must contain but little, and consequently be very poor; and year after year, though he may put as much farm-yard manure on his land as his better managing neighbours, yet he will always be behind-hand with supplying this essential of vegetation. But the farmer who at once gives to his land a full and sufficient supply of azote, will reap the advantages of such a course for many years after, and that with very little additional expence or effort in keeping up such supply. For, besides the consideration that from the plentifulness of his crops, and, as must follow, of the hay, straw, and manure, which he must have at his disposal; that manure will be highly azotised, and through this means so much increased in value, as to afford to the land such an extra supply of azote, as will in a great measure keep up the extra quantity which was originally supplied to the land. This being the case, after getting the soil into a highly fertile state, it will require little more keeping in that condition, than it would if kept so poor as to be comparatively unfruitful.

When soil is very rich, and contains a large proportion of azote and carbon, it will cause vegetables to grow abundantly; but if not sown with sufficient seed, the plants will in some cases be so large as not to come to perfection. The azote will attract the carbon of the soil and air with great rapidity, and consequently the growth of the plants will be exceedingly rapid. When this is the case, their increase in size is liable to be too sudden for the assimilation of the inorganic substances to take place in their proper proportion. This is especially the case with oats, which, if sown sparingly on such soil, the plants will increase in size with such rapidity, that they cannot take up a sufficient supply of silica to keep pace with it, and consequently the stalk, which receives much of its strength from this substance, will have very little stability, and consequently the plants will soon be laid. In this case, there will not be a sufficient supply for the proper formation of the heads, and upon the whole the produce will be bad. This will not generally happen when the corn is sown so thick as to bear some proportion to the richness of the soil; for then the growth will be more natural, and so gradual that each of the plants will be capable of collecting from the soil which surrounds their roots, a sufficiency of silica during every stage of their growth.

From the view of the *modus operandi* of azote which we have taken, the *unvaried proportion* of carbonic acid gas in the air ceases any longer to be a mystery. Vegetation being the only known process whereby carbonic acid is to any considerable extent diminished, it has been considered as inexplicable that, notwithstanding the immense production of this gas which is constantly taking place, still there appears to be no perceptible difference in the quantity existing in the atmosphere. From the great increase of population, and consesequently the proportionate production of carbonic acid, as far as it depends on the respiration of animals, it might be supposed to be gradually on the increase, and the quantity of oxgyen in the air to be diminishing, but this is found not to be the case. If this were the case, and if there exists at present only sufficient carbonic acid for the supply of vegetation, then it follows that before the world was peopled to any extent, this supply must have been either deficient or the same extent of vegetation not in existence. But we have no reason to suppose that any very considerable increase in vegetation has taken place, for nearly all the parts of the earth at all fit for the production of plants would at all times be covered with them, either in one form or another. If we take for instance our own land, wherever the soil is not taken up by cultivation, grass or some other production, principally perennial, will abound, which, flourishing during winter and summer, will throughout the year assimilate carbon; while a large proportion of cultivated land, only bearing vegetables during a part of the year, can consequently only assimilate it during the same period. But on the other hand, the vegetables were not taken from the earth, but left for decomposition, and through this means would produce carbonic acid gas, without animal agency. And, besides this, all animals containing a large proportion of carbon, the many millions which are now in existence, must constantly withhold from the earth a large portion of that carbon which originally belonged to it. This would at first sight lead us to suppose that there ought to be less of this gas than formerly existed, instead of more. But the *modus operandi* of the attracting agent of vegetation, shows us that azote is an effectual means of keeping in check the undue increase of carbonic acid; and it must be borne in mind, that all animals contain a large proportion of this gas, as well as carbon, and consequently in animal matter there will be fixed two elements, the influences of which when in operation counteract each other. The more azote there is in a state of liberation, the greater the attracting power of plants, and consequently the greater tendency to the fixation of the carbon: and *vice versa*, the less azote at liberty, the less the power to fix the carbon, and, as must follow, the more carbonic acid in the atmosphere. It is of little consequence how much carbon is added to the air, as long as there is an equivalent quantity of azote along with it, as the increase will be counteracted by an increase of vegetation; and though, by the discovery and use of coals, we may be sending annually into the air millions of tons of carbon, which would otherwise have been in a state of inactivity, yet on account of coals containing a proportionate quantity of azote, by its means the influence of the carbon will soon be neutralized. So that we find azote not only to be the element which procures food for plants, but also the influence which regulates the quantity of carbonic acid gas existing in the surrounding atmosphere.

Thirsk, Yorkshire, Oct. 22.

IMPORTANT TO AGRICULTURISTS.

Sir,—Allow me, through the medium of your columns, to call public attention to some extraordinary results in farming, which have come under my own observation. I recommend them to the serious attention of your agricultural readers, many of whom are probably not aware of the profit that may be made from land under a somewhat different method of cultivation from that usually pursued.

Samuel Bridge, of Stock Green, near Feckenham, Worcestershire, has about four acres of *very inferior, stiff, clay land* on the blue lias, which he has occupied for twenty-seven years. He grows wheat and potatoes, and about one-quarter acre of beans. Leaving the beans out of the account, for the sake of simplifying it, we may consider two acres to be in wheat, and two acres in potatoes every year, the crop being of course shifted alternately from one division to the other.

His system of cultivation is this. As soon as the wheat is off, he breast-ploughs his stubble ground, raking up, and saving the stubble carefully to litter his pigs. He then digs it all over with a fork, and plants his potatoes on it the following spring; this crop being kept clean while growing, the land, when it is taken up, needs no further preparation for wheat.

He has pursued this system of cultivation during the whole period, with the exception of the first three years, when his neighbours *ploughed* his land for him *for nothing*. They are willing, he says, to do the same now at any time, but he *prefers going to the expense of digging it* to having it *ploughed for nothing*. He has done so for the last twenty-four years.

He does most of the labour himself, but he estimates the whole by measure according to the rate at which he pays others. It amounts altogether to 4*l*. 6s. 1½d. per acre; his average produce has been rather more than five quarters, or forty bushels of wheat per acre, and twelve tons of potatoes per acre.

He sells all his produce, even his straw, excepting a few potatoes and beans, which he consumes in feeding about thirty or forty score of bacon annually for his own consumption; he litters his pigs with the potato haulm and stubble, and the manure from this source, and from his privy, with some clay out of his ditches, which he gets occasionally, and burns, is all that he has.

Leaving out of consideration the small quantity of beans raised, and of bacon fed, valuing the wheat at 7s. per bushel (it has probably averaged more than this during the time he has occupied the land), and the rest of his produce at the price he obtains for it, we shall have something like the following account.

Sold annually—						
24 tons of potatoes at 50s. per ton				£60	0	0
80 bushels of wheat at 7s. per bushel				28	0	0
4 tons of wheat straw at 50s. per ton				10	0	0
				£98	0	0
Deduct as under—						
*Manual wages at 4*l*. 6s. 1½d. per acre	£17	4	6			
Seed potatoes for two acres, 25 bags of 180lbs. at 4s.	5	0	0			
4 bush. seed wheat at 7s. 6d.	1	10	0			
				23	14	6
Subject to rent and parochial payments				£74	5	6

This useful and industrious member of society has bought his hand and erected a cottage and outbuildings upon it.

Every farmer who reads this statement will probably say at once that this man's system of culture is bad because he sells all his crops, or nearly so. This I fully admit, and believe he would realize a larger profit if he grew, say beans and potatoes, and consumed them all in feeding pork and bacon; but even under this disadvantage what are the results which he has obtained?

I believe that most of the land at present under cultivation in England yields little more than 5*l*. *per acre, gross produce*, and pays not more than 20s. per acre per annum manual wages.

Samuel Bridge off *very inferior land* has obtained, *for a quarter of a century*, nearly 25*l*. per acre gross produce, and paid more than 4*l*. per acre, manual wages, or used labour to that amount. He employs then four times as much labour, and gets five times as much produce as the generality of farmers.

He gets 18*l*. 11s. 4d. per acre, subject only to rent and parochial payments. The land in the neighbourhood is rented, I believe, generally at 24s. to 25s. per acre. The latter amount being deducted, leaves 17*l*. 6s. 4d. per acre profit to the cultivator, subject only to parochial payments.

I am aware that in some of the good agricultural districts, crops equal or superior to Bridge's are obtained, as is the case on this farm, under plough culture, but to have obtained *such crops* from *bad land during so long a period*, and with *so little manure*, renders the case extraordinary, and I think it is to the thorough digging, *when in a dry state*, of the ground, and the absence of the trampling of horses, that we must attribute the result obtained.

Were this quantity of manual labour employed on the land, and these results obtained all over England at the present time, we might, perhaps, with more reason talk about our inability to *employ* and *maintain* our population. Why should such numbers of people in England be unemployed and starving?

J. Morton, Esq., agent to the Earl of Ducie, allows me to state that he has visited S. Bridge, that his land is a cold tenacious clay, that he heard his account of his system of cultivation, and that the account I have given of it in this letter is perfectly correct.—I am, Sir, yours respectfully, HENRY F. FARDON,

A Pupil on Whitfield Example Farm.

PS.—The wages were given me by Bridge at so much per rood of 64 square yards, a common measure in Worcestershire; I have calculated 75 of these to the acre, without regarding the fraction.

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* Manual wages per acre.

Potatoes.

	£	s.	d.
Breast-ploughing Stubble	0	9	4½
Forking over	1	8	1½
Planting potatoes	1	17	6
Keeping them clean	0	4	0
Getting up	2	16	3
	6	15	3
£6 15s. 3d. × =	3	10	6

Wheat.

	£	s.	d.
Planting	0	4	0
Keeping clean	0	4	0
Reaping	0	8	0
Thrashing at 6d. per bush.	1	1	0
	1	17	0
£1 17s. 0d. × 2 =	3	11	0
	13	10	6
	17	4	6
4) £17 4s. 6d. (	4	6	1½

GUANO.

[FROM THE LIVERPOOL COURIER.]

We are happy to hear from our agricultural and horticultural friends that this new manure, which was tried in our neighbourhood last year for the first time with such favourable results, has again proved itself to be one of the most valuable manures ever introduced, either for field or garden crops. It has been used to a considerable extent in this country, both in a dry and liquid state, and in every instance, when properly applied, has answered well for crops of every kind. It has also been proved to be a lasting manure, for very good crops have been obtained without any manure whatever from the land where guano was applied, and had given good crops, last year.

Our farmers and gardeners have no doubt much to learn with regard to the proper quantity to be used of this new manure, but as a great many experiments have this year been made with it, we may expect this point will soon be settled. In this neighbourhood guano has been applied in wheat and other grain crops, and on grass lands as a top-dressing, at the rate of two hundred weight per statute acre, with most excellent effect. For turnips four hundred weight has been used to the acre, and given very good crops, and from four to six hundred weight to potatoes, with like success. In the gardens and nursery grounds guano has been applied in a liquid state, and in that manner has surpassed every manure yet discovered. Its effects on young fruit and forest trees is wonderful, also upon green-house and hot-house plants of every description; even the exotic heaths, to which manure of any kind has been considered injurious, seem to flourish beyond all precedent when watered with it. About four pounds to twelve gallons of water is enough for hot-house and green-house plants. The water should stand twenty-four hours before use, and when drawn off twelve gallons more may be put to the same guano.

SEED WHEAT.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—In your paper of last week, I observed the report of an experiment made by Mr. Lungley, to test the comparative merits of "best wheat," and "tail wheat" for seed—the result proving, that "a fair sample," that is, one of medium quality, "*will produce as much, and of as good a quality, as the very superior seed,*" &c. I also observed, that the celebrated Springel, late Professor of Agriculture in Brunswick, has discovered and asserted, that "*the best bread corn is not the best seed corn; that we may increase the nutritious quality by the soil and the manure; but that for seed, this highly nourishing corn is unsuitable.*"

I was much gratified to find the above statements in your paper, as they go to confirm one of the same nature, made by myself, nearly a dozen years ago, in a provincial newspaper, and also in the *British Farmer's Magazine*; and being convinced by subsequent experiments, and experience without experiment, of the soundness of the principle, I addressed a letter to you on the subject, which letter appeared in the *Express*, in the year 1837, and another in the *Farmer's Magazine*, in September 1840, being anxious to call the attention of agriculturists to the practice, convinced as I was, and am, of the advantages likely to arise from the adoption of it. (The latter paper I send you for insertion in the *Express*, if you think proper to do so, during the present wheat seed-time.) I remember one year making a calculation of the weight of wheat *saved* per acre in seed, and the additional weight *gained* per acre in produce, which together made something considerable, by using seed of a low quality on one half of a field, as compared with prime seed used on the other half; but I cannot now lay my hand upon the memorandum referred to, nor have I the publication in which a statement of it appeared.

I am, Sir, your very obedient servant,
Oct. 25th. PETER COWAN.

ON THE SELECTION OF SEED GRAIN.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—Some observations by different writers have lately appeared in your paper on the subject of seed wheat, and at the late Cambridge meeting several of the speakers again introduced and enlarged upon it as one of great importance, which it no doubt is. Having had considerable experience as to the proper *quality* of grain to be used for seed, and formed an opinion respecting it different from the generally received one, I will, with your permission, cast my mite into the treasury. If the doctrine to be advanced should startle any reader into an instant condemnation of it,—if it is likely at first view to be denounced and repelled as unsound, let such an one pause, and before he comes to a hasty decision, let him, if in his power, put it to the test of experiment—a fair unbiassed experiment, without a pre-determination to arrive at a certain result.

Some hints of the following nature were thrown out a few years ago, and appeared in a work conducted by the late Rev. Henry Berry. That gentleman, in a note appended to the article, demurred to the correctness of the doctrine in its application to cattle and sheep. As applied to seed grain, he made no remark. It seems, however, to be equally applicable to both. Perhaps a premium for the best essay founded on experiments made on this subject, would be well bestowed by any agricultural society.

Agriculturists, then, generally choose THE BEST samples of grain for seed which are procurable in their respective, or in distant neighbourhoods. The question is, is this practice—that of selecting the *primest article* for seed—a wise one, or might not an article of *secondary quality* answer better?

There appears to be a limit set by climate, cultivation, situation, and local circumstances, to the *quality* of the produce of the soil. All cultivated vegetables have a tendency to degenerate, but this tendency is more than counteracted by the cultivation bestowed, until they arrive at a degree of perfection beyond which it does not appear possible by any cultivation to push them; and if this is attempted a recoil is induced, and a degree of degeneracy and inferiority in the produce appears to be inevitable. This is perhaps particularly the case in annual and biennial plants. Suppose a very prime sample of wheat is presented to us, such as might induce a farmer or corn factor to pronounce it one of the best which he had ever seen. "An admirable article *for seed*, sir, I assure you." Softly, my good friend, perhaps you mistake. The presumption is, that this fine grain grew on land of the best quality, which was prepared in the best possible manner for it; that the circumstances attending its growth, ripening, harvesting, &c., had been particularly favourable; and that it had, in fact, arrived at the utmost perfection which it was capable of attaining. Now, if this fine grain is used as seed, what will be the result? of what quality will be the produce? Will it not be found to have degenerated, to be much inferior to the seed used? Improve it cannot—that it will remain stationary is just possible, but that it will go back is almost certain. When grain is used which has reached the maximum—wheat weighing, say 66lbs. per bushel, barley weighing 58lbs. per bushel, oats weighing 48lbs. per bushel—is the produce reaped equal in quality to the seed sown, or is it not always a few pounds, and often a considerable number of pounds lighter? The plants appear to be constitutionally incapable of producing an equal to that grain from which they sprung, because it had attained that degree of perfection beyond which it could not possibly go, and therefore retrograde it must for a season; but having now room, it will advance again the following season, if climate, soil, and circumstances are favourable; should these be unfavourable, it will continue to retrograde.

If this doctrine is correct, it follows, that to raise *a first-rate article as produce*, we must use an article of *lower quality as seed*.

My attention was first directed to this subject in the year 1830. Having that year a small field to sow with wheat, for which I had no seed left, I procured as much from a neighbour. The quality was very middling indeed, considered as *seed* wheat; so much so, that the farm servants who pickled and sowed it, &c., could not avoid regretting and grumbling during those operations, that such inferior seed should be sown on such fine land. The field had been well prepared for potatoes, had borne an excellent crop of them, and was in prime order; the soil a clayey loam. I was not at all satisfied myself with the course I was pursuing, but I had no alternative at hand, and sown it was. The crop was a good one, and was in due time thrashed out, when *nothing could exceed the beauty of the sample.* Just at that time the agricultural society of the district announced a premium for the best sample of five tons of seed wheat; I became a competitor with the produce of the derided seed, and obtained the *first premium.* This is a fact well known in the neighbourhood where it occurred. The five tons were eagerly bought up for seed by different parties, and in every instance that I could ascertain the following season, the produce of it had degenerated.

The year following I sowed a large field with potato oats. This field had been part of the holding of a tenant who had rented it for seven years, and who had resigned it in wretchedly bad order. It was scourged out with over-cropping, poor in the extreme from the same cause (not naturally poor,) and crowded with root and seed weeds. The first season it was summer fallowed, and a number of boys, girls, and women were employed during the entire summer and autumn, in collecting and burning the weeds which appeared after each ploughing and harrowing. In November it was ridged up for the winter. The next spring it underwent a preparation for Swedish turnips, and every root weed appearing was carefully picked off. It received an excellent manuring with farm-yard dung, and the crop of Swedes was very fine. The half of the crop was drawn off for cattle, and the remaining half was eaten on the ground with sheep. Having determined to lay it down to pasture for some years, and potato oats being then in great demand in the district, it was, the following spring, sown with that grain, drilled at nine inches, and grass seeds. The seed oats used on the occasion weighed 41lbs. per bushel. The crop was a splendid one, the produce weighing 48lbs. per bushel. It was shown for a premium offered by the society before-mentioned for the best seed oats, and the first or highest one was awarded to it. The article was greatly admired, and was all sold for seed, at fully the price of wheat; but in no instance that I could afterwards discover, was the produce equal in quality to the parent; indeed in some cases the produce was so inferior, that complaints were made by the parties who purchased it, hinting that they had been imposed upon, that the seed could not have been genuine potato oats, &c.; and various other causes, but never the right ones were assigned for the deficiency.

The same result occurred in the case of a field of barley, after turnips, which had been fed off by sheep. An article two or three removes from the best was used as seed; the produce was first-rate, and would also have obtained a premium, had the grain not been very much discoloured by the prevalence of wet weather during harvest. Just about that time, I read in a Fifeshire newspaper, the account of a farmer's practice there, who was famed for growing good "seed barley" for sale. It was stated, as a remarkable fact, that the seed used by himself for raising the superior article he was famed for, was invariably of a *low* quality.

Public opinion has hitherto been against using any but the finest samples of grain for seed, judging that the finer the seed is, the better is the produce likely to be; that, as vegetables incline to degenerate, the best plan is to sow the best seed of them which can be got, thus avoiding degeneracy, and aiming at perfection. This would be all very well if the principle were a correct one, which it evidently is not; if it were, we should by this time have had wheat as large as beans, and as heavy. Grain of the weights I have mentioned, or approaching them, is about the limit fixed by our climate for their attainment; and if we sow them with a view of raising a better or even as good, we shall find to our mortification, that instead of going forward, we have been going backward. Change of soil and situation have no doubt an invigorating influence on plants subjected to them, but no change of soil or situation can add improvement to a production which has already attained perfection.

If "Nature is uniform in all her operations," and if we may judge of the whole of her great plan by a part of it, we have abundant evidence of the truth and correctness of the foregoing theory, in the habits of the cultivated potato. All practical men know that a potato tuber grown on good land, perfectly ripened there, mealy when boiled—a potato in fact as perfected as our climate, soil, and cultivation will permit—is the worst possible one for seed, because it produces a weakly, languid, unhealthy, curled plant, with a greatly diminished progeny; whereas, a watery, unripened, bad-to-eat potato is the best for seed, such being well known to produce a strong, healthy, vigorous plant, with abundance at the root.

It is pretty clear that, as yet, vegetable physiology is but imperfectly understood amongst us, and those who have been attentive observers will be led to conclude, that when vegetables, animals, or even the mental powers of man, attain an extraordinary degree of perfection, degeneracy in those particulars in which they have been superior seems invariably to await their offspring.

I am, Sir, your obedient servant,

August, 1840. P. C.

PROPOSED YORKSHIRE LAND-DRAINING ASSOCIATION.—The adoption of the Joint-stock principle of raising capital for agricultural purposes may be, we conceive, one of the most beneficial applications of that principle that has ever been proposed; there being some known methods of improving the land and making it permanently much more productive than it now is, which are manifestly impracticable to most agriculturists, simply from the great outlay required in the first instance, and the comparatively slow return of the benefits. These, however, though more tardy than the profits of trade and manufactures, are more certain; and while they must eventually repay the cost to the adventurer, with interest, they will become a national boon, by increasing the productiveness of the soil. This applies especially to the question of *thorough draining*; and it is with much satisfaction that we notice a very lucid and able prospectus by Mr. J. H. Charnock, of Wakefield, for the formation of a Land-draining Company, to be called the "Yorkshire Land-draining Association," a scheme to which we hope very shortly to see appended many influential county names, as we already find that it is attracting great attention among agricultural interests. We have not space to enter more fully into the details of this plan at present, but we may briefly mention its principal features. It is intended to establish the head office in York, with agencies in other towns of the county. The proposed capital to be subscribed is 500,000*l.*, in 20,000 shares of 25*l.* each. The authority under which this association is proposed to be established, is based upon an act passed in the session of 1839-40. The objects of the association as set forth in the prospectus are, "1st—To provide the requisite amount for either owner or occupier, or the two conjointly, to thorough-drain their land, repaying the same with interest, by half-yearly instalments, during a series of years to be fixed, either at an agreed rate per cent., or by a certain charge per acre, to be determined by competent parties, in proportion to the benefit the land has derived from the work; and which work shall in all cases be done under the direction of the association. 2ndly—To make the tiles on the most approved plan, and in the cheapest and most convenient localities, so as to supply them at the lowest price; and 3rdly—To take on suitable leases any land considered worth the operation to thorough-drain it, and relet it." The prospectus goes on to say, that looking "at the prospects of the farming interest, with reference to the effect that may result from the recent relaxation of the protective duties on agricultural produce, and considering that the issue must in some degree be experimental, it may not be asserting too much to say, that the present position of the agricultural community seems emphatically to call for the most active promotion of every *practical improvement*, which, by securing an increase of production, may tend to counterbalance the depression consequent upon any permanent reduction in prices. That the operation of an association in the manner proposed would eminently contribute to this end can scarcely be questioned; whilst both reason and common interest would, it may be presumed, with no less certainty, ensure both owners and occupiers availing themselves of the means thus offered; securing to the former the permanent improvement of estate, with, in due time, a proportionate increase of rent; and to the latter, an immediate return considerably exceeding any charge which the cost of the work would for a time entail." It will be remembered that at one of the meetings of the Royal English Agricultural Society at Liverpool, Lord Stanley remarked "that it would be advisable to drain estates even with borrowed money." And the author of the essay on "Land-drainage, Subsoil-ploughing, and Irrigation," after noticing this remark of Lord Stanley's, concludes by saying, "and were a company to be formed for the employment of capital in the draining of land upon the principles laid down in the act (before mentioned), it would assuredly become an institution of not only national importance, but also of profitable investment as resting on the sure basis of landed security." We shall probably return to the subject in our next.—*Leeds Intelligencer.*

CORN RENTS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—I have observed in the accounts given in your paper, of the proceedings at farmer's clubs, and other meetings of agriculturists in various parts of the kingdom, frequent reference to corn rents for farms, as one of the modes calculated to better the condition of farmers in these revolutionary times; and having put my hand upon a form of agreement, printed and circulated in my practice as a land agent in 1814, I enclose it for publication in your journal, if you think it will interest your readers, having by a few alterations adapted it to the present state of things. I think it right, however, to say, that although at first warmly sought after, the corn rent part of it went out of fashion, because the mode of making the calculations was not satisfactory to the farmers, particularly when there was an advance in the rent: when it happened to come out lower than the standard, they understood it well enough. The farmers, as a body, were not then so well educated as they are now, so that the same objections might not now apply. The necessity for a limit to the variation in the averages is quite necessary, because the variation may arise from an excess of produce on the one hand, and from short crops and bad harvests on the other. Experience compels me to warn both landlords and tenants from corn rents, unless assured that the corn laws and the tariff are to undergo no further change; but rent, after all, is but as a drop of water in the ocean compared with the other expences of a farm. The present is a struggle of no ordinary kind, the only chance for both landlord and tenant is, to unite their means in under-draining the wet land, and sub-soil ploughing wherever practicable; to increase the quantity of farm-yard manure, economizing the liquid portions of it; to use good implements, and avoid the fancy ones; and never, on any account, to plant any but the very best seeds of all kinds. The landlords to make experiments, the tenants to avoid them, adopting only such as shall have been well tested. Landlord and tenant going thus hand-in-hand will then have nothing to fear from foreign foes, or from home foes; but all must lessen unnecessary expenditure, and then what is to become of the shopkeeper and manufacturer? Oh, that our legislators would let well alone—when will they learn wisdom?

Yours, very truly,

Tottenham, 20*th Oct*. 1842. Jas. Dean.

An Agreement, made the tenth day of August, in the year 1842, *between Robert Taylor, of the parish of Bickley, in the county of Devon, Esq., of the one part, and Henry Jackson, of the parish of Wellington, in the county of Somerset, of the other part, as follow.*

The said Robert Taylor agrees to let, and the said Henry Jackson agrees to take, all that messuage and farm, called Summerland, with its rights, members, and appurtenances (the particulars whereof are set forth in a schedule hereon indorsed,) situate in the parish of Holwell, in the county of Devon, reserving to the said Robert Taylor, his heirs, executors, administrators, and assigns, liberty at all times to view the state and condition of the said premises; also all minerals, trees, saplings, coppices, and underwood, now or hereafter to be on the premises, with liberty to take and remove the same, making reasonable compensation for the crops injured thereby; also, power to alter hedges, and to plant trees in the hedge-rows; also of exchanging intermixed lands; also of altering roads, and making new ones; also of diverting streams of water, for the purposes of irrigation or otherwise, and making ponds, and leading water into or through the premises, making compensation for damage done thereby; also all game and fish, and the right of sporting, for himself and all persons authorized by him, at all times; and of bringing actions against trespassers in the name of the said Henry Jackson, indemnifying him from costs: to have and to hold the said premises, with the appurtenances, excepting what is herein reserved unto the said Henry Jackson, for fourteen years, to be computed from the 25th day of March next. And the said parties hereby severally and mutually agree to observe, perform, fulfil and keep the conditions, agreements, and provisoes, hereinafter contained, during the continuance of the said term; and in particular, it is mutually understood and reciprocally agreed, by and between the said parties, that the said Henry Jackson shall, in respect of the first year of the said term, pay unto the said

Robert Taylor the rent, or sum of three hundred pounds, by quarterly payments, the first quarterly payment to become due and payable at Midsummer next, which rent has been fixed with reference to the average price of wheat in the Exeter market, being eight shillings per imperial bushel; and that the rent of each and every succeeding twelve months shall be fixed quarterly, with reference to the monthly returns of the average price of wheat in the same market, in such quarter, as published in the London Gazette; or if not published in the London Gazette, then by the average returns of the price of wheat, made to the grand jury, at each quarter sessions of the peace, for the county of Devon; and the amount thereof shall be paid by the said Henry Jackson, in proportion to the average price of wheat, as eight shillings per bushel now is to the three hundred pounds, the rent first reserved: provided, that in no case shall the amount of rent be calculated upon a lower average than six shillings per bushel, nor on an higher average than ten shillings per bushel; the said quarterly payments to become due and payable on the 24th day of June, 29th of September, 24th of December, and 25th of March, in each and every year of the said term, free from all charges and deductions whatsoever of taxes or other outgoings, parliamentary or parochial, the land-tax, rent-charge in lieu of tithes, and the landlord's portion of the property-tax only excepted. But in case any difference shall hereafter arise between the said Robert Taylor and Henry Jackson, as to the amount of rent due and payable, the said Henry Jackson agrees to pay to the said Robert Taylor at the rate of three hundred pounds per annum, until such difference shall be adjusted. And the said Henry Jackson also agrees to pay a further annual rent at the rate of five pounds per cent. on all monies which may be expended by the said Robert Taylor, at his the said Henry Jackson's request, in making permanent improvements on the said premises. Also, a further rent at the rate of twenty pounds per acre per annum, for all lands which shall be cropped with hemp or flax, or from which more than two crops of corn, grain, or seeds, shall be taken in successive years, and for the meadow and pasture land, described as such in the schedule underwritten, which shall be converted into arable land, such additional rents to become payable from the time of such cropping and conversion respectively, and continue payable to the end, or other sooner determination of the said term; also a further yearly rent at the rate of five pounds per acre, for such of the arable land as shall be twice sowed or planted with white straw corn or grain, or once with potatoes, or from which two crops of seeds shall be taken, and of any of the meadow or arable land, from which two crops of hay shall in succession be taken; unless the said Henry Jackson shall, when required thereto, exhibit to the said Robert Taylor a true account in writing, that eighty bushels of lime, or twenty, three horse-loads of dung, or other manure of equal goodness and value, hath, in respect of, and before the taking of such crops, been spread upon each acre of the land, so cropped and mowed as aforesaid. Also, a further yearly rent of twenty pounds, together with double the value of any hay, straw, or fodder, dung, compost, mineral, or manure, arising from, or in any manner, or for any purpose, brought upon the said premises, which shall be sold or carried off the same; also, a further rent of five pounds yearly for any and every tree, sapling or teller, over and above the value of such tree, sapling, or teller, which shall be cut, topped, or polled, or otherwise injured by the act, default, or neglect of the said Henry Jackson; also, for each acre of the orchard ground that shall be depastured with any other stock than horses and pigs; also, for each acre of the orchards, which shall not be kept full planted with good trees, taking in lieu thereof the old and decayed trees; also, a further rent of five pounds per acre for all hay or clover mowed in the last year of the said term, over and above the usual and proportionate quantity, and shall also forfeit the surplus quantity so mowed. Also, a further rent of twenty pounds for each year, and so on in proportion for less time than a year, that the dwelling-house and farm-buildings, or either of them, shall from time to time be out of repair, after three months notice to repair has been given by the said Robert Taylor, the same being put into tenantable repair by the said Robert Taylor, within the first two years of the said term, the walls and timber-work of the buildings to be afterwards kept in repair by the said Robert Taylor during the term, unless the same shall become dilapidated by the wilful act, neglect, or default of the said Henry Jackson; the said Henry Jackson doing carriage of all materials gratis. And the said Henry Jackson further agrees, that he will from time to time repair, and keep in repair the gates, bars, posts, rails, and pales on the said premises, and the iron-work thereof, and in the like good condition leave the same at the end, or other sooner determination of the said term, being allowed round timber in the rough for that purpose, by the delivery of the said Robert Taylor, where grown not exceeding three miles from the said premises, the same being put into repair by the said Robert Taylor, within the first year of the said term. And the said Henry Jackson further agrees not to cut down hedgerow-wood partially, nor without scouring the ditches and repairing the banks adjoining thereto, in a workman-like manner, and also sufficiently guarding the new-made hedges from the bite of cattle, nor shall or will cut down any hedgerow-wood being a fence to arable lands, but when such lands are first broken up for a course of tillage; nor then, until ten days notice shall have been given to the said Robert Taylor of such intention. And the said Henry Jackson further agrees to allow the agent of the said Robert Taylor to set out and mark whatever saplings, tellers, or plants he may deem fit to remain to become timber trees, or forfeit twenty pounds as liquidated damages for every statute perch of hedgerow-wood which shall be cut down contrary to the intent and meaning hereof. And the said Henry Jackson further agrees, that he will preserve the trees, saplings, tellers, underwood, coppices, hedges, and fences, being or hereafter to be on the said premises, from spoil or destruction; and will cleanse the gutters, drains, ditches, and water-courses, in and upon the said premises, as often as need shall require; and shall not nor will permit or suffer any other than the lawful and accustomed paths to be used upon or over the said premises; and will regularly spread on the said premises the dung, compost, and manure made thereon during the said term; and such as may arise and be made within the twelve months next, preceding the end of the said term, or other sooner determination thereof, shall and will leave for the benefit of the said Robert Taylor, upon being paid for the same by valuation, in the usual manner. And the said Henry Jackson further agrees that he will harrow and brush in, with the corn crops of the last year of the said term, or other sooner determination thereof gratis, such grass seeds as the said Robert Taylor shall cause to be sowed therein; and that he will not depasture the arishes or stubbles so sowed with stock, after the twentieth day of November following, and up to that time with sheep only; and also, that he the said Robert Taylor, or the incoming tenant, may, if he think proper, enter upon such of the ley ground as shall be in course for cropping, at any time after Midsummer in the year preceding the end of the said term, or other sooner determination thereof, to prepare the same for wheat and other crops, paying to the said Henry Jackson at the rate of one pound per acre for the same; and on the arishes or stubbles immediately after the corn or grain has been removed, without paying any thing for the same. And the said Henry Jackson further agrees, that he will use and manage the said farm and lands according to the rules of good husbandry in all respects, and will not impoverish or make barren the same. And the said Henry Jackson further agrees, to accept and pay for a lease made conformably to these presents, with the addition of such other covenants as are usually introduced into leases of farms in the same neighbourhood, and that he will execute a counterpart of such lease, when thereto required by the said Robert Taylor, such counterpart to be paid for by the said Robert Taylor. And the said Henry Jackson agrees, that in case he shall omit or fail to perform any of the stipulations or agreements herein contained, after twenty day's notice in writing, from time to time, the said Robert Taylor shall be at liberty, where work or materials or both are required on the premises, to do or cause the same to be performed; and the said Henry Jackson agrees to repay to the said Robert Taylor his disbursements in respect thereof. And it is also agreed, that if the said Henry Jackson shall not make the said premises his home and place of residence, or shall voluntary or by the operation of law, assign, demise over, or underlet the same, or any part thereof, other than by his last will and testament to his wife, child, or children, without the licence in writing of the said Robert Taylor, first had and obtained; or shall omit to pay any of the aforesaid yearly rents, within the space of twenty days next after the same shall respectively become due, being first demanded; or shall neglect to perform any of the stipulations or agreements herein contained, it shall be lawful for the said Robert Taylor if he think proper, to determine and make void this agreement, and the said premises to have again, re-possess, and enjoy as his first and former estate, any thing herein contained to the contrary thereof in anywise notwithstanding. And it is mutually agreed, that if at any time during the said term any controversy shall arise, touching or concerning any matter or thing herein contained, the same shall be settled by referees, one of whom to be chosen by each party, and a third to be named by the referees so chosen, whose decision, or the decision of any two of them, if made and delivered in writing to the parties within one month from the date of each such reference, shall be final and conclusive. Provided that the powers of the said arbitrators shall not extend to annul this agreement, or to exempt the said Henry Jackson from the payment of damages consequent on the commitment of waste; and lastly, it is mutually agreed by and between the said parties, that Robert Taylor shall be interpreted to include his heirs, executors, administrators, and assigns, and that Henry Jackson shall be deemed to include his wife, child, or children (if any,) and also his executors or administrators. In witness thereof, the said parties have hereto subscribed their names, the day and year first above written.

SCHEDULE HEREIN REFERRED TO.

No. on Map.	*Parcels.*	*A. R. P.*	*State at Midsummer*, 1842.
1	Messuage, Yard, and Garden ..	0 3 10	
2	Pound Park	1 2 6	Pasture, full manured in 1840
3	Great Meadow ..	6 1 10	Meadow, watered and mowed
4	Barn Park	3 2 20	Arable, wheat first crop after breaking up from ley
5	Greenslade	5 1 16	Arable, barley sown with grass seeds
6	Loamland	3 2 10	Ley, second year after a white straw corn crop

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DIBBLING WHEAT.

TO THE EDITOR OF THE ESSEX HERALD.

Sir,—The attention that was paid to an experiment in dibbling wheat, by Mr. Lucas, detailed minutely in your paper about the year 1840, induces these further hints on this most important subject.

If from three to four pecks per acre dibbled yield as much as ten drilled, and even more is sometimes sown with the drill, how enormous might be the saving of seed wheat and other grain annually in the three kingdoms. In the New Testament, Math. xiii., 4 and 5, we read, "A sower went forth to sow, and as he sowed some fell by the wayside," which could not have happened with the drill. This passage, therefore, in the sacred volume seems to establish the fact as to the spreading the seed, and that the broadcast was probably the mode two thousand years ago; and the broadcast and dibbling to this day are preferred by many of our oldest farmers, being also the best means of covering the ground with the seed. The drill necessarily leaves half, if not three-fourths, of the field fallow; when, if hoed, (i.e., the roots of the weed *pruned* by the hoe) it becomes still more injurious to the *root* of the wheat, which requires more, much more, attention than the *blade*. From three pecks to four dibbled—as I am told by experienced agriculturists—yielding four quarters per acre, renders for each single grain of wheat (if only three pecks) forty-two grains and a fraction; three bushels broadcast per acre (which many sow) yielding, suppose four quarters per acre, render for one grain of wheat, *only* ten grains and a fraction. So much for the loss in *quantity*. Now as to the *quality* of the sample. On 2nd January, 1842, the season having been very wet, and the slug most destructive, a small bunch of drilled wheat just appearing about an inch high was taken up, all single and very small shoots, and all adhering to their several seeds. One of them was planted in the same place, and the others transplanted into garden ground, twelve of which yielded each of them four, five, or six large stems or straws, the ears very large, in all seventy or more, and very heavy, with not above two or three under ears amongst them, while all the ears in the *field* were *much smaller*, with many under ears. And as if to confirm the advantage of thin sowing, there was in the same field a circular declivity, where there had formerly been a pond, in which spot the plant had *failed altogether*, owing to the wet and the slug. In this place, late in January, some more of the same sample was dibbled, which though sown so late yielded a very fine plant, the ears as large and heavy as those transplanted into the garden ground. A dozen of each, from the field and the garden, are tied up in separate bunches, and have been preserved.

From this we infer that it is not so much the quality of the seed sown as the state of the earth where the seed is properly deposited, that makes, or mars, the success of the harvest. All the labourers and harvest men bore witness to this remarkable exhibition of dibbled wheat so much finer than that drilled, although growing in the very worst part of the field drilled, demonstrating the indispensable necessity of the *separate* deposit of the seed, in order to procure a fine sample. If it be from one point in the grain of wheat that vegetation commences (as from the eye of the potato), the blade thence ascending, and the root descending, that point must not be encumbered by the hard substance of other grains which must happen when they lie together as deposited in the drill rows, the small fibres of the roots being thus hindered from shooting, and the plant thus necessarily much checked in its growth. Hence it will be allowed that in the aggregate, the enormous waste of seed, and consequent deterioration and diminution of the crops in the annual produce of the three kingdoms, present a subject to which (though perhaps novel) many may think, at this momentous crisis of agricultural difficulties, more time and attention should be devoted; or to use the metaphorical language of the great prophet—"Break up your fallow ground, and sow not among thorns."—Jer. iv., 3. Yours, &c.

September, 1812. AGRICOLA.

ON PLOUGHS AND PLOUGHING MATCHES.

TO THE EDITOR OF THE HEREFORD TIMES.

SIR,—It is obvious that there is no department in agriculture that demands the attention of the farmer more than that of rightly cultivating the ground; and as this is the period of the year when the ploughing competitions of your county take place, perhaps you will permit me, through the medium of your columns, to address a few observations to the conductors of those truly useful institutions. I am informed that when the ground for the Hereford Ploughing Match is selected a stubble field is invariably made choice of—as I should suppose, from its being considered the most suitable for testing the superiority of the ploughmen and their ploughs. Now, Sir, I differ entirely from this opinion, and do think that stubble ground in general is the most ineligible either to prove the skill of the ploughman, or the mechanical properties of the plough. In the first place, when ploughing for prizes, the competitors should be left entirely to the exercise of their own skill and judgment in taking the several furrows of the ridge; but this is not the case in ploughing stubble ground, inasmuch as it affords a guide to the ploughman, especially when the previous ploughing has been done straight and skilfully. I have frequently seen ordinary ploughmen do nearly as good work as the first-rate hands in what is called falling down ridges; but when they come to be thrown on their own judgment, they get all abroad; for this reason, I consider stubble ground not proper to prove the relative skill of the ploughmen. Then, in regard to ascertaining the best constructed plough, I am of opinion that any kind of stubble ground is not the fittest, from its being generally of too friable a nature, unless it be a clayey soil; and even then it is apt to be too flexible to show every nicety of difference in the construction of the instruments. To prove the best constructed plough, the ground should be such that every furrow of the ridge might be seen distinctly after the work is performed, and of such toughness as to require the greatest nicety in the construction of the cutting and moving parts of the plough, to place the furrow at the proper angle. A tough clover lay, in ridges of twelve or twenty-four feet wide, I consider the most eligible ground both to prove the skill of the ploughman and the construction of the instruments. Another practice, I learn, prevails at the Herefordshire Ploughing Matches, of using flays or skimmers on the ploughs, and that any plough, not having one of these on it, is not allowed to compete for the prize. There is no greater advocate for the flay than myself in some kinds of ploughings, such as grassy or chanchy ground, in order to accelerate the decomposition of the vegetable matter of the soil, or for the turning in of stubbles; but to use the flay on land intended to be sown immediately is a very bad practice, and argues a want of insight into the nature of the work, since, by using the flay on clover leys, or any ground that is to be sown, interstices are created between the furrows into which the seed falls, and works under the sod, and fails to come up. Indeed, the plough that requires a flay on it for almost any kind of work, is a badly constructed one; and I am of opinion that those who are advocates for the flay, on any ground to be sown broadcast, have taken but a very cursory view of the matter, and will, by close attention and observation, change their opinion on the subject. As there is no means better calculated to give a stimulus to young men to become proficient in this important branch of agriculture, than by public ploughing matches, it is to be regretted that any means should be looked over that would further the advancement of the art. Trusting that you will give publicity to these observations, and that they will meet the eye of the conductors of ploughing competitions, I beg to remain, Sir, your obedient Servant,

VILLICUS.

MR. PRICE, THE CELEBRATED BREEDER OF HEREFORD CATTLE.—We stated some time since that it was in contemplation to publish a print of this gentleman, whose reputation as a breeder of Herefords stands unrivalled. It affords us very great pleasure to announce that the object has been carried into execution, and that a lithographic print of Mr. Price is now published, engraved from a painting by Mr. Tatham. The print is executed in the first style of art, and is an admirable likeness.

STEWPONEY AGRICULTURAL ASSOCIATION ANNIVERSARY.

(FROM THE WORCESTER HERALD.)

A finer morning never graced mid-autumn than was that of Tuesday, Oct. 18, when we wended our way from Worcester to be present at the anniversary meeting of this spirited association. The air was dry and elastic, but yet having in it something of a haze, relieving the atmosphere and us "sons of nature" from that hard cutting clearness which accompanies intense frost; and if one could suppose such a thing in our climate, we should say that Tuesday morning in Worcestershire resembled the first days of what is called in North America "the Indian summer." All the local writers describe that brief season as being most delightful: it happens just about this time of the year, and its chief characteristic a warm tinted haze in the atmosphere—a kind of ærial clear obscure—interposes itself between that period, one comparatively genial, and the sternness of an American winter. Whatever nature does, she does gracefully, and not the least graceful of her doings is this pretty mode of smoothing the way for the otherwise somewhat saddening effect of the falling of the leaf: if her works in this portion of the globe are not exactly the same they are yet of "most cunning pattern," the many, tinted glories of autumnal foliage prepare the most ardent lovers of vernal "greenerie" for the change, and while they point out the end and indicate the bareness that must take place, by pleasing his eye, reconcile him to its necessity.

Our road lay through Ombersley, Hartlebury, and by the eastern side of Kidderminster. All of these places and parishes have matter in their history worth inditing, but of too serious a kind for our *currente calamo* chronicle. Ombersley, with its shadowy cognomen, is now most famous for raising the best potatoes in Worcestershire. We are not certain that Hartlebury is famous for anything: it sleeps in the fame of a past of which we have not time to tell; and Kidderminster rejoiceth in being universally known wherever men are accustomed to those creature comforts denominated carpets, which in the British Isles are nowhere manufactured to the same extent.

A *terra incognita* intervenes between the borough of carpets and the Stewponey, which latter very odd name distinguishes an inn of first-rate respectability in point of extent and everything that may become an hostelry of Old England, situate just within Staffordshire, and a mere stone's throw of our own county. What the derivation of its singular name may be we shall not tell our readers, for a very good reason—we don't know ourselves, and nobody can tell us, at least we are justified in so saying from the result of a rather extensive enquiry. There is no village nor hamlet to give that effect which contrast might impart to the rather imposing size of the inn, but immediately opposite its windows, looking south, at the distance of a pistol shot, stands Stourton Castle, the seat of James Foster, Esq., lately High Sheriff of Worcestershire, one of the largest iron manufacturers in the midland districts, and in his public and private capacity a gentleman universally beloved. And a few minutes' walk distant stands the princely mansion of Prestwood, the seat of John Hodgetts Hodgetts Foley, Esq., the proprietor of the greater portion of the soil in the neighbourhood. Mr. Foley was the originator and is still the most ardent supporter of the Stewponey Agricultural Association; he is also esteemed as a liberal landlord, and in every sense of the term an excellent sample of the English gentleman. We don't use the word "old," because we do not believe that the English gentlemen of a former day were better, or indeed equal, to their descendants. They were as good as the circumstances in their day allowed; but, in ours, when, notwithstanding all the prejudices of the ignorant, and the false sneering of the malignant, it admits of demonstration that all classes have improved, it is absurdly libellous to suppose that the country gentry have stood still. We venture to say that nowhere in our social system is there more vigorous appearance of coming up to the day and hour than among them, and as an instance, proving so far that we are in the right, we would point to such associations and such meetings as we are about to record, and ask where their prototypes are to be found in the history of the past?

Hundreds of the yeomen of the neighbourhood, with a respectable assemblage of visitors from Kidderminster, Stourbridge, Wolverhampton, Birmingham, &c., were on the ground inspecting the show of pigs, sheep, and agricultural implements. The Society being only in its second year, has not ventured yet on offering prizes for cattle; and indeed, as its operations are located in a non-breeding county, it is but prudent to wait for a season, till the stimulus given through the prizes offered for the lesser glories of the farm-yard, may lead emulation so far as to render a show of the greater not unworthy of the society. Another year is likely to see such a thing; in the meantime we have to say that the show of pigs and sheep was very respectable, especially that of the former animals.

About a mile from the Inn the ploughing match came off, in a field belonging to the landlord. There were five teams at work, the match being for the best ploughed half acre, with any description of plough, drawn by two horses, the furrow not more than nine inches. Excellent judges pronounced the whole work to have been done very nicely, and the successful competitors will be found in our detail of winners of the premiums. The ponderous labours of the subsoil plough attracted much attention, and though it was decreed that neither of the competitors had sufficient merit, it, as far as mere spectacle went, was the most interesting thing of the day. The splendid teams, of four great horses, in their holiday gearing, stalking with grave quadrupedal earnestness along the line, were well worth looking at; and it was really an imposing sight to behold the ease with which the immense coulter shore and pushed aside its long-continuous, broad, and deep, gigantic slices of old mother earth; nevertheless, more practised eyes, o'erlooking the merits of the spectacle, discovered wants in the performance which were hidden to us, and so decreed; but this shall not prevent us from wishing the subsoilers "better luck next time."

A dynamometer was provided for the use of the society, and applied to ascertain the draught of the ploughs, the result of which was not correctly given.

The show of implements, principally from Wolverhampton and Birmingham, was very good, and it was quite amusing to see so many chaff-cutters and turnip-slicers at work. As far as we were able to judge, the various machines did their work in good style; but a single-horse chaff-cutting engine, and a thrashing machine, also driven by one horse, were our favourites. It was rather surprising, however, that the very handsome premium of 20*l.*, offered for the best application of steam to agricultural purposes, failed to bring a single candidate into the field.

We subjoin a list of the principal implements exhibited :—

BY MESSRS. WELCH, SON, AND WOOD, OF KIDDERMINSTER.

Seven ploughs (manufactured by Messrs. Ransome, of Ipswich) ; two turnip-cutters ; a very good cake breaker ; two weighing machines ; a much-improved grain bruiser ; a ridge turnip drill ; four chaff machines ; an improved winnowing machine ; a newly invented machine for making hay, of very superior construction ; a new Scotch reaping scythe ; a hay rake ; sack carts ; iron hurdles and gates ; piling irons, turnip choppers, waggon covers, &c., &c.

[Though Messrs. Welch did not compete for any prize, theirs was certainly the best show.]

BY MR. ALEXANDER DEAN, OF BIRMINGHAM.

Dean's patent domestic flour mill (capable of grinding and dressing, at one operation, upwards of two bushels of wheat within the hour) ; two hand corn crushers, to crush oats, beans, malt, and Kibble Indian corn, &c. ; patent hand dressing machine, for dressing flour and other pulverised substances ; a potato washer, of simple construction, upon four wheels ; portable apparatus for steaming potatoes, turnips, hay, and other food for cattle ; portable steam kiln, for drying oats, malt, and other grain ; an improved chaff machine ; a powerful bean mill, &c., &c.

BY MR. ZACHARIAH PARKES, OF BIRMINGHAM.

A patent domestic flour mill, turned by the power of a man or boy, and capable of grinding and dressing, at one operation, a peck and half in the hour. [This was an exceedingly neat and compact little article, and excited general attention.]

BY MR. PRATT, OF WANNERTON.

A very superior chaff cutter, manufactured by Wilkes ; Phillips's patent turnip cutter ; Bailey's improved turnip cutter ; Ransome's wheel plough ; Welch, Son, and Wood's weighing machine ; ridge scuffler, by Crosskill ; a very superior thrashing machine, four horse power, manufactured by Crosskill ; a dressing machine, by the same maker ; Gardner's patent turnip cutter ; a manure and turnip drill, manufactured by Leathe and White, Saxmundham, Surrey ; Garrett's patent oilcake crusher ; Crosskill's liquid manure cart ; a chaff cutter, with three knives, made by Brewster and Brewood ; a sack cart ; also some fine specimens of fruit, turnips, mangel wurzel, &c., &c.

A variety of implements were exhibited by Mr. Nock, of Kinver ; also a patent cast iron rick stand by Mr. William Foster, of Wordsley.

The show of live stock was smaller than had been anticipated ; but this was partly occasioned by the Shropshire Agricultural Meeting taking place on the same day. There were some pigs exhibited of an excellent breed by William Foster, Esq., of Wordsley, and several pens of sheep by Mr. John Wilson and others. There were also same cattle, but none which appeared to excite particular attention.

About half-past four o'clock, the members of the Society sat down to dinner in a splendid pavilion, furnished by Mr. Griffiths, of Wolverhampton, and quite equal in comfort and neatness to the far-famed Edgington's canvas conveniences.

The chair was taken by Lord Lyttelton, Lord-Lieutenant of Worcestershire ; the vice-chair being filled by W. A. Roberts, Esq., formerly M.P. for Bewdley ; and among the company we observed the Rev. Thomas Baker, Hartlebury ; Rev. — Wharton, Kinver ; Rev. Winnington Ingram, and Rev. — Powell ; J. H. H. Foley, Esq., Henry Talbot, Esq., James Foster, Esq., John Brown, Esq., Arther Skey, Esq., Thomas Pickering, Esq. (Witley), W. Moseley, Esq., — Glynne, Esq., Hugh Campbell, Esq., E. L. Gatacre, Esq., J. Boucher, Esq., — Grazebrook, Esq., W. Trow, Esq., E. Pratt, Esq., J. Sanders, Esq., W. Talbot, Esq., B. Littlewood, Esq., Messrs. Banton, Price, Hopkins, Blakeway, Hillman, Strutt, Jordans, Beddard, Humphries, Deveril, Hewitt, Ransome (Ipswich), Nock, Birch, Wilson, Hill, Perry, Parrish, Yardley, &c., &c. Mr. Wharton officiated as Chaplain, and due justice having been done to the good fare, the cloth was withdrawn, and, after the usual loyal toasts,

W. A. ROBERTS, Esq., rose and in a neat speech said—I am requested to give the health of Lord Lyttelton, the President of the Association, and Chairman *(immense applause)*.

Lord LYTTELTON : Gentlemen, I have in the first place to thank Mr. Roberts for proposing my health, and next to thank you for the manner in which you have drunk it. I can only say that I am glad to see so numerous an assemblage to-day, and shall continue to rejoice equally in the like success of the Society, though I may not fill my present exalted situation *(cheers)*. Perhaps, gentlemen, this may be the best time for me to express a few remarks on the merits of such institutions as ours, although these will be far better expressed to you by-and-by by my friend Mr. Foley. Indeed many of you, or all of you, are more able than myself to explain the objects of such societies ; and especially as the little I have to say on the subject was nearly exhausted last year. Nevertheless, I am so persuaded of the importance of these societies, that I will not omit the present opportunity of declaring my opinion on one or two points connected with them. The merits of such societies I would then say are so obvious, that the best way for their advocates to support them is perhaps to advert to the objections which those who do not like them have brought forward. Some public writers have objected to them on two grounds —to one of which I applied some remarks last year, and therefore it is to the second that I shall now address a few observations *(hear)*. The first question is, do such societies tend to divert the tenants from believing that their interest is bound up with that of the landlord ; the other relates to the advantages or disadvantages of employing machinery in rural operations. I stated last year that I did not believe that the tendency of such societies could be to divert the tenant from believing that his interest was identical with that of his landlord ; but that, on the contrary, their operation must be by bringing tenant and landlord more into friendly contact, in so far to improve the knowledge of both, and to increase a good and kindly feeling. When the landlord thoroughly understands his own interest, he will be the more ready to allow the really properly-instructed tenant to have his own way. Such societies are capable of advancing both kinds of knowledge, and therefore must tend to increase the best feelings betwixt landlord and tenant *(cheers)*. With regard to the other question, the advantages or disadvantages of machinery employed in agriculture, there has been considerable doubt expressed. You are aware that it has been brought forward lately at many important agricultural meetings, and among others at the great agricultural meeting held at Bristol. There can be no doubt that in agriculture, as in other departments, the introduction of machinery may tend in the first instance to displace manual labour to some extent—it may throw many persons out of employment at first, and I regret that such should be the case; nor am I able to see how this concomitant evil is to be avoided. It is not my intention, however, to examine every particular of this important question; I shall only mention one general argument in favour of the advantages of machinery, leaving the details for your own consideration. There can be no doubt but all those improvements in machinery of which we are now speaking rest upon improvements in the sciences; there can be as little doubt but that all improvements in science are to be regarded as gifts from Providence; and as it is impossible to suppose that there can be any evil proceeding from such a source, there can be little doubt but that any individual evil which arises will be amply compensated in some other way. All the gifts of Providence must tend to our advantage; they must tend to good, not evil, and all the hardship and distress that may appear to arise in this way is mainly to be counteracted by those kindly feelings between employer and labourer which are engendered by societies like this. (His lordship sat down amid great cheering.)

J. H. H. Foley, Esq., then rose and said:—The toast which has been committed to me is, "Success to the Stewponey Agricultural Association;" and in giving the toast I am bound to say that I have the greatest pleasure, for reasons which I shall shortly tell you. At the anniversary meeting last year, the number of members was 176, at present it is 214; thus showing an increase of 38 during an interval of one year, and that marked by extraordinary depression in the great manufacturing interests of the country (*hear and cheers*). It must also be recollected that since last anniversary meeting the sphere within which the society acts has been extended two miles. Now I had—and I said at the time that I had—great doubt of the expediency of extending its operations, but I am happy to say now that, taught by the result, I am glad to admit that your decision was right. Experience, indeed, has proved that it was so, because, though the sphere of our operations has been so extended, we have still the same numerical force on a given quantity of surface. We still number seventeen and a fraction of members to every mile, as we did before that extension was agreed upon (*cheers*). I am also happy to add that our exertions have met with the approval of the great landowners. For example, Sir Robert Pigot, Mr. Charlton Whitmore, Mr. Childe, and Mr. J. Cookes support us, and theirs is an example which I hope to see followed by many others (*hear*). I say so, because I am certain that these gentlemen, and all others within our sphere, cannot possibly more highly advance the best interests of all within the scope of their influence (*hear*). Our meetings—I appeal to the example of to-day—give the manufacturer an opportunity of exhibiting his ingenious machines, and also of showing to the landlords and tenants of the district where they may purchase these; thus both of the great interests in the state are advanced, and this takes place without either giving way to the other (*hear, hear*). In this way our labours, however small and of no account, may be useful to the chemist and the farmer, as showing them how the great experiments which they conduct may ultimately tend (*loud cheers*). Here it may perhaps not be improper for me to remark, that the society has felt itself indebted to the publishers and authors of an excellent little book, "The Farmers' Almanac," by Mr. Cuthbert Johnson and Mr. Shaw; and as the committee provided a copy to each member of the society last year, so they also have resolved to provide them again, thinking that the supplying of them had been well received (*cheers*). With regard to our library, I have a strong impression that it may do much good; it remains for the members to say whether it shall; but as far as the periodicals are concerned, I beg leave now to say to you, my neighbours and friends, don't stop their circulation at your own houses. If you are not disposed to read them we can't force you; but I ask you to do, as every member of a book club does, "pass them on." It does happen that among you there are some who forget this, and I am sure they and all of you will forgive me if I say that in thus stopping the progress of knowledge—neither reading yourself nor letting others read—you are acting the part of a man who, sitting at this table or any of your hospitable boards, should have eight bottles of wine come up to him successively and should stop them all. In that case he would deprive the rest of the company of considerable means of gratification, and at the same time would not be one whit the more gratified himself (*cheers*). I have now, with sincere pleasure, to notice one feature of our anniversary—the bestowal of prizes on agricultural labourers—and on that head shall merely observe that those prizes are as highly creditable to the deserving labourers by whom they are obtained as to the society by whom they are bestowed (*cheers*). But our institution has not stopped at the bestowal of prizes or premiums on deserving labourers for those things enumerated in our programme, we have cared otherwise for them. Regarding the peasantry—the honest, independent peasantry of England—as the mainstay of the country, we have sought to establish a club in this society, at least, within the scope of its operation, which should secure to the poor man the benefits of those combinations which are usually attached only to the condition of the rich (*hear, and cheers*). I regret to add that some misunderstanding seems to have prevailed as to its real nature. With regard to what we intended in this association, I cannot help thinking that some misunderstanding seems to prevail, and therefore I shall take the present opportunity of expressing my ideas on the subject (*hear*). All of you who are acquainted in the least with the principles of life assurance, know that these proceed on progressive tables; as, for example, that the man of thirty years of age to be ensured for a given time should pay proportionably less than the man of forty years. A gentleman of the name of Becher was the first who applied this discovery to benefit-clubs, and it was in his honour that we named our club, and though it has happened that circumstances have interfered to prevent the fullest means of success we could have wished; I am glad to say we cannot be said to have been unsuccessful (*cheers*). There is a similar club at Stratford-on-Avon, in which, I am happy to say, there are 3,000 members enrolled; and I am sure I am borne out in saying to the committee of this association, who have gone through the labour of forming the club, that there is no occasion for their despairing of the important and beneficial results to which they looked in their labour (*hear*). The last year, the first of its existence, has been one of unparalleled depression in the commercial and trading departments of Great Britain; still we have had fifty-one members enrolled in our club; we have received 40*l.* in donations, and 16*l.* 10*s.* in subscriptions; and I do say that this is much more than could have been expected. This is, I say it again, much more than could have been expected; and in asking each and all of you to support this association, I say so on the broad ground that it deserves such support on its own merits; and on these I am contented to let its claims to your support entirely depend (*great cheering*).

The Noble Chairman then proceeded to read the award of the Judges in regard to the premiums, which we detail at the conclusion of this paragraph. And first as to the prize for turnips, his Lordship said that it was right in him to mention that the Judges, speaking of this prize, had particularly eulogised Mr. Davies, (the landlord), as gaining the prize from the produce of a "weak poor soil." [A good deal of merriment was caused by the *bonhommie* of his Lordship in giving in brief the sentiments of the Judges in regard to the subsoil ploughing. It seems that the Judges were not satisfied with it, yet they did not say why, and they recommended the candidates to "try again," resting contented in the meantime with the abiding influence of "brotherly love." Now we have seen something of this sort of fun in our day, and we say fearlessly that the subsoil ploughing was at least equal to any specimen of the more superficial—but the Judges are men whose dicta is not to be disputed, and we are quite content that our friends of the double trench should try again. Mr. Davies, the worthy host of the Stewponey, the successful turnip shower made a very modest and pleasing reply to the toast of his health.]

The Chairman proceeded to the other classes of prizes, and it may be said of him in these things as it was said of somebody else, we forget who, "nil tetigit sed non ornavit." One feature in this part of the business of the evening deserves record. Two old men, peasants, competed for the longest period of membership in a benefit club, both are members of the Hartlebury benefit club, and both had been 55 years in it, but the successful candidate had deen one month longer a member than the other! [Such instances show the great want of equity of the competitive condition of things.] The facts were testified in this case by the Rev. Mr. Baker, incumbent of the parish, who was kind enough to attend and vouch them, and also to speak in behalf of both the old and aged men. The several candidates in the class of agricultural labourers were here introduced and paid their several premiums. There were some eight or ten men among them from 35 to 85 years of age, and two women. There was a natural desire evinced to say something on the receipt by each of his prize, and we are bound to say that, as usual, the most natural, and in every way the best and most becoming expression of this sort came from the two candidates of the softer sex, at which, too, it is right to add that the prize-receiving males and all then "present there" rejoiced obstreperously.

The general award of the Judges was also read as follows:—

PREMIUMS.

Ten sovereigns for the best crop of Swede turnips not less than ten acres, to Mr. John Davies, of the Stewponey Inn.

Five sovereigns for the second-best crop of Swede turnips, not less than ten aeres, to Mr. Wm. Perry, of Penn.

Ten sovereigns for the most satisfactory experiments on subsoil and trench ploughing, and double trenching with spade. Two candidates, but not sufficient merit for a prize.

Five sovereigns for the best essay on manures, to be founded on experience or observation alone, to Mr. Daniel Banton, of Seisdon.

The premiums for labourers, household servants, and servants in husbandry, were then read.

EXTRAS.

Five sovereigns (given by W. B. Collis, Esq., of Stourbridge), for the best pen of ten yearling ewes, to Mr. John Wilson, of Aston.

Three sovereigns for the best yearling Leicester or long-woolled ram, to Mr. John Wilson, of Aston.

Three sovereigns for the best Southdown or grey-faced ram, to Mr. Wm. Perry, of Penn.

Two sovereigns for the best boar, to Mr. Foster, Wordsley.

Two sovereigns for the best breeding sow, to Mr. Foster, Wordsley.

PRIZES FOR PUBLIC COMPETITION.

Twenty sovereigns for the exhibition of the most useful application of steam to agricultural purposes, with reference to the following qualifications:—1st. Least cost and greatest economy in fuel. 2nd. Practical utility and greatest variety of application. 3rd. Portability and simplicity of management. 4th. Safety from fire or other accidents, and saving of labour. No candidate.

IMPLEMENTS.

Five sovereigns for the most useful, new, or improved agricultural implement, to Edward Pratt, of Wannerton, for liquid manure cart.

Three sovereigns to the owner of the best plough for general purposes, to Mr. John Wilson, of Aston.

Two sovereigns to the owner of the second-best plough, to Mr. John Nock, of Kinver.

Five sovereigns for the largest exhibition of the most useful agricultural implements, to Mr. Edward Pratt.

ROOTS.

Three sovereigns for the best exhibition of turnips, carrots, potatoes, cabbage, and mangel-wurzel, to John Hodgetts Hodgetts Foley, Esq.

SEEDS.

Two sovereigns for the best exhibition of agricultural seeds, to Mr. John Perry, of Stourbridge.

The Chairman next proposed "The health of the Judges, Messrs. William Stokes, John Otley, George Halkett, and Robert Lucas." His lordship added that nothing could have been more indefatigable or more zealous than the conduct of those gentlemen, and he would add, that nothing was of greater importance; because, upon the confidence reposed in their decisions, rested entirely the prosperity of that important portion of the business of the association, which regarded the showing of stock (*Cheers.*) And he only hoped that the subsoil competitors, whose efforts it appeared had fallen short of the Judges' approval, would drink the health as warmly as he was sure it would be done in a general way. (*Great cheering, and a voice from the distance "to be sure we will."*)

Mr. Otley returned thanks very neatly, remarking that if the decision of himself and colleagues gave satisfaction, they would be amply rewarded (*Cheers*). Mr. Otley then proposed "The healths of the successful candidates," which was responded to by Mr. Davies, of the Stewponey, who candidly avowed, that though he had often heard others say that they did not care whether they gained a prize or not, he himself was very proud indeed of gaining the prize which had been awarded to him (*Hear*).

The Chairman then proposed "The healths of Messrs. Joseph King and Jeremiah Mathews," the Judges of the "Essays upon Manure." There were four papers sent in for competition, the first of which, marked A, was an essay on vegetable physiology, containing a great deal of useful information, arranged with great neatness, but being confessedly the result of reading only, and not of experience, could not according to the regulations of the society be received. The essays marked D and E were also of considerable merit, and the prize essay marked C was entirely admirable so far as it went; but it only regarded wheat, and therefore the Judges had thought proper to accompany their award with the wish that the author, whoever he was, would not confine himself to that grain, but include in his next essay the other species of farming produce. (Drank with the honours and cheers.)

Mr. Mathews, one of the Judges returned thanks. He was flattered by being permitted to be useful in any way to the society, and as to the essay on vegetable physiology, he would say that no member of the society could be permitted to read it without deriving benefit therefrom. He would also say, that all the other papers were characterised by great common sense, and a considerable depth of observation (*Cheers.*) With regard to Mr. Banton's essay, it had all the merits attributed to it by his lordship, and would at all times amply repay perusal. Mr. Mathews sat down by proposing the health of Mr. Banton, which was drunk with the honours and great cheering.

Mr. Banton replied to the compliment in energetic terms. As to his essay, it was a real practical detail of his own experience. He had seen the wheat, its subject, planted, he had witnessed its growth, he had seen it reaped, he had seen it stacked and thrashed (*Cheers.*) He proposed the healths of the Judges of sheep, Messrs. Foster and Wilson.

Mr. Wilson returned thanks, regretting that in his department there had not been greater competition. He also announced his intention of giving a prize of five sovereigns to be competed for next year by the best pen of six wether shear hogs. Mr. Wilson remarked that he was himself a breeder of long-wooled sheep, but he was assured that there was no delicacy in his proposing this prize on that account (*cheers*); and he sat down after proposing "The healths of the exhibitors of agricultural implements," which was drunk with the honours, and for which Mr. John Nock returned thanks.

Hugh Campbell, Esq., proposed the next toast as follows:—I give the health of perhaps the most useful person engaged in agriculture (*Hear*). It is he who at last does all the work; and though he be not the best paid, the meeting at all events shews that he is highly esteemed. I give you "The health of the agricultural labourer of England". (Drank with all the honours and great cheering.)

Mr. Ransome (agricultural implement maker from Ipswich) replied to this toast in a very feeling and eloquent address, remarking that whatever difficulty he might have felt in addressing an assemblage of strangers, was entirely obviated by the nature of the toast, seeing that it permitted of his making a few observations on its import (*Cheers.*) He felt this to be a privilege when he recollected the manner in which the peasant of England had resisted, in the midst of strong temptations and great privations, the inducements held out to him by many to whom he was accustomed to look as something superior (*Cheers.*) When he reflected on what had recently occurred in this country, and on the conduct of the labourer during that trying crisis, he was bound to say that no farmer—no English farmer—could do less than feel that he lay under heavy obligations to the patient and long enduring labourer (*Cheers.*) He was glad to see that this sentiment was acted upon, and it was not the least pleasing feature in the proceedings of such societies that the capabilities and good qualities of the labourer were thoughtfully recognised and rewarded (*Cheers.*) In the same spirit he regarded the influence such societies were calculated to have upon the relations of landowner and tenant, so that in the three great departments of labourer, occupier, and proprieter, they might be said to effect a junction similar to that which had been spoken of in reference to a three-fold knit cord, which, it was said, should never be broken (*Cheers.*) He especially approved of what had been so well said by Mr. Foley as to teaching the labourer the true heart of independence by showing him how he might rely upon himself for succour in the day of adversity and the weakness of old age (*Cheers*). And surely there could be no higher object for any association of human beings, seeing that in proportion as the society did this, so would it render the agricultural labourer—the mass of their countrymen—a better husband, a better father, a better servant, and in every way a better member of society (*Cheers*). True charity consisted in that—not in promiscuous bestowal of gifts, but in teaching its objects to rely upon themselves, and not resting there, but in showing them where and how that reliance might safely be reposed (*Cheers*). Connected with the subject, there was one point to which he would refer, the subject of general education—(*hear, hear*)—and regarding it he knew that great prejudice existed. He meant not by education any species of knowledge that did not teach man to estimate more truly his real position in society as regarded the duty which he owed to his fellow, to himself, and the Creator (*Hear*). Mr. Ransome concluded by proposing "Success to the Royal Agricultural Society," which was drunk with the honours, and acknowledged by Mr. Gatacre.

Mr. Foley then rose and said—I beg leave, in obtruding myself for the second time, to say that I value the premium bestowed upon me, although of small amount, very highly. Our noble Chairman has said that though I am the originator of this society, it is the first prize I have gained; but that will not seem wonderful to you, when I tell you that it is the first for which I have competed (*Cheers*). It so happens that I had some land lying idle, and having read the agricultural periodicals in our library, I was set on to try if I could not follow out their instruction by bringing it into at least some better state than its former condition. To that end I dug some holes, not very scientifically, some six feet in length, and came in digging to what is vulgarly called "a pan," that is a condition of the soil which neither allows air to enter nor water to escape. I then employed from eighty to one hundred labourers in double trenching it, and with a portion of its produce I have gained the prize awarded. I am quite sure that the land that produced the roots exhibited by me to-day is capable of producing other kinds of produce, and therefore I am justified in saying that if all bad and indifferent land were similarly treated, we should never hear of want of employment for the agricultural labourer, notwithstanding the utmost progress of machinery (*Great cheers*). Mr. Foley concluded by saying that he would make his prize of 3*l*., 5*l*., to be given next year for the best South-down ram (*Cheers*).

The Chairman then rose and said, that he must obtrude, as Mr. Foley called it, that gentleman a third time to the company, in proposing his health, both as the founder of the society and an estimable landlord (*Drank with great applause).*

Mr. Foley, after expressing his repugnance to merely personal toasts, declared that nothing gave him more gratification than the success of the society; and he hoped that those who wished well to it would take the map of its sphere of operations and look over it, and then they would see who came within that scope, and who did not. He knew that many did not join because they thought they were beyond its limits when they actually were not.

The Chairman then gave "Prosperity to agriculture and commerce. His Lordship said—We are met to celebrate the cause of agriculture, and when we add to that the cause of commerce, as these two make up the whole country, we are in fact drinking prosperity to every individual in Great Britain. I should indeed regret to find that any real difference separated those two great interests, which are in their nature entirely bound up together. The seeming difference between them, of which we have often heard, appears to me to resemble the fancied antagonism between machinery and manual labour, to which I formerly alluded. It is as certain as the sun that these two great supports of this country must either destroy or support each other (*Drank with honours and cheers).*

Mr. Foster returned thanks, both as a retired farmer and as a manufacturer. As the latter he was positive that manufactures could not prosper when agriculture was depressed *(Hear).* If the one fell to the ground, the other would; and if the one prospered, the other would. He would like to see both prospering, and was certain they could not without mutually reciprocating the advantages of each (*Cheers).*

Mr. Foley proposed the health of Earl Stamford, as an excellent nobleman as ever breathed, and a true specimen of the fine old English gentleman (*Drank with great applause*).

Mr. Lindon proposed the health of Mr. Ransome, of Ipswich.

Mr. Ransome returned thanks. It had been justly remarked that he came among agriculturists seeking profit, but he would add, that the pleasure of carrying out his pursuits was very much enhanced by coming in contact with those to whom they led. His business led him into the company of scientific men, and not only of scientific, but practical men, from whose suggestions and hints it was that all improvements flowed (*Hear*). He had been well pleased to hear the noble Lord's opinion of the question raised as to the employment of machinery in rural affairs, and it was perhaps needless to add, that he entirely coincided in that opinion. In fact, what was the object of the agriculturist? It was to get the largest amount of produce at the smallest amount of cost *(Hear, hear, hear).* Could there be any doubt that the employment of machinery led to that result? And if it did, could it be a question with agriculturists whether they ought to employ the means to so desirable an end? It was their duty as men and members of the community to do so. It was their duty as regarded themselves—as regarded their country, and as respected posterity, to take every means of increasing the growth of that grain, which he was happy to say was yet the general food of the peasantry of England (*Hear, hear, and cheers).* He would mention a fact, a cheering fact, in looking at the question of machinery, throughout England wherever he had been he had always found that the farmer who employed the greatest amount of machine power in his business, also invariably employed the largest number of labourers (*Hear, hear, and cheers*). He agreed with the noble Lord in regarding machinery and all its improvements as gifts of Providence, and he also agreed with the hon. gentleman who had declared that agriculture and commerce were knit together. It had been so ordered by Providence that one order of people could not be in difficulties without the other feeling distress, and he also believed that the prosperity of the one brought success to the other *(Cheers*). After some humourous remarks, Mr. Ransome concluded by saying—You, gentlemen, live in a place where steam engines are very plentiful, but it is not so where I live; and having some years ago a mind to try the application of steam power to agricultural purposes, I, as they say in the *Times* or *Morning Chronicle*, put out a feeler, but I got little encouragement. "What," said the farmers, "would you destroy a class of the farmers' best customers—the horses?" Now this notion of declining the aid of steam for fear of losing the custom of the horses, put him in mind of the story told of a publican who retired from the main road into an out-of-the-way by-place. When he was asked why he had left the world to bury himself there, he said that he had left the bustle of the road, and taken to a quieter place, that he might have plenty of leisure to attend to his two best customers —his wife and himself! (*Laughter*). Mr. Ransome sat down amid great cheering.

The Chairman next proposed "Mr. Holyoake and the Albrighton Fox-hounds," and in his absence would call upon Mr. Grazebrook to acknowledge the toast, as well as reply to Mr. Ransome, knowing as he (his Lordship) did that Mr. Grazebrook had peculiar notions of machinery.

Mr. Grazebrook returned thanks; and first as to replying to Mr. Ransome, he would say that he had heard him last year; he did not agree with him then —he was not convinced now. As to steam, it seemed done at Stewponey, however it might get on elsewhere, if they might judge from the entire absence of competitors for the premium offered. He would wish to see more like Mr. Foley employing spade husbandry, which, in his opinion, was far better than steam. He had great pleasure in seeing so many present whom he met in the field; and he would beg of the farmers to let the foxes live till the hunting season came, as they would kill them for them, as their work in the last fortnight had shown. He had no doubt they would do this, and put up with some small damage, which Mr. Reynard, or, as the farmers thereabouts called him, "Mr. Reynolds," sometimes did to their poultry (*A laugh*). He was happy to say the pack was in capital order, the horses were sound, and the earths would be well stopped *(Cheers*). He was himself a manufacturer, and if he was not he could not be a fox-hunter. The corn-bin was not so full perhaps as it had been, or as he could wish it; but he would be content, and it was his wish to spend his days in the country. He never wished to go farther than his back could carry him, or his hunter bring him back *(Cheers).*

Nine o'clock had now arrived, at which time the noble Lord left the chair, and the greater part of the company separated.

PENRITH AGRICULTURAL SOCIETY'S EXHIBITION.

The annual exhibition of stock, &c., of the Penrith branch of the East Cumberland Agricultural Association, took place in a field near the Sandgate, Penrith.

The Dinner

took place at the George Inn, and a very excellent one indeed was provided by Mr. Watson. The chair was taken by T. Featherstonhaugh, Esq., of Kirkoswald; and the vice-chair was ably filled by E. W. Hasell, Esq., of Dalemain. About ninety gentlemen sat down to dinner, amongst whom we noticed H. Howard, Esq., of Greystoke Castle; Colonel Lowther, M.P., of Lowther; W. Crackenthorpe, Esq., of Newbiggen Hall; Joseph Salkeld, Esq., of Penrith; J. Crosby, Esq., of Kirkbythore; G. H. Hewitt, Esq., of Burgh; W. E. James, Esq., of Barrock Lodge; Charles Featherstonhaugh, Esq., Kirkoswald, and many of the most respectable yeomanry of the neighbourhood. The usual loyal and patriotic toast having been drunk,

Mr. **Hasell** proposed the Members for the Eastern Division of Cumberland.

Mr. W. E. James returned thanks on behalf of his father.

Colonel **Lowther** returned thanks for the very handsome manner in which the healths of the Members for Westmoreland had been proposed, and the kind manner in which the toast had been received. Speaking for himself, he must say he had always been willing, and indeed, most anxious to give every aid in his power to the promotion of agriculture. With one exception, he had attended every meeting of the Penrith Agricultural Society, and that exception was last year, when he was attending his parliamentary duties. With respect to the society to which Mr. Howard had alluded, as having been established in Westmoreland, it had only been in existence one year; but he had no doubt it would be found most beneficial in its operation. Every one now felt the advantage which agriculturists derived from meeting each other, and seeing what others were doing, instead of sitting at home with their hands crossed, under the comfortable impression that they knew every thing. It was by such meetings that knowledge was promoted; and he trusted that improvements would soon be manifested in the farmers in Westmoreland, as they had already been in Cumberland.

The **Vice-Chairman** proposed the health of the Lord of the Manor of Inglewood, the Duke of Devonshire, to whom they were all so much indebted for his patronage.—Drunk with three times three.

The **Chairman** said they had now arrived at that stage of the proceedings of the evening, when it became his pleasing duty to propose "Success to the Penrith Agricultural Society." In proposing this toast he could not but congratulate those around him on the great improvement which had taken place in the breeds of animals within the last few years. Strangers might possibly be surprised that more animals had not been shown that day; but the deficiency in number was easily accounted for, when they considered how numerous were the societies of a similar description which might now be said to cover the length and breadth of the land, and to which so many members of that society were contributors. He was himself but a young agriculturist, and therefore it would ill become him to pretend to give information to those around him, who were so much better qualified to be his teachers; nor would he dilate on the excellences of the stock they had that day seen exhibited, as the secretary was about to read the awards of the judges, from which they would be best enabled to form an estimate of the value of the exhibition; he could not, however, sit down without again congratulating the meeting on the advantages which the society had conferred upon the district by the introduction of such excellent stock. The toast was drunk with three times three, and long continued applause.

The secretary then read the awards, as follows:

CLASS II.—CATTLE.

6. Best short-horned bull, being an improved stock-getter, engaged to serve cows within the limits of this society, during the succeeding twelve months, at 10s. each—Eight pounds; to Mr. W. Boustead, Hackthorpe.

7. Second best ditto—Four pounds; to Mr. Bell, Inglewood House.

8. Best short-horned bull, above one, and under two years old, 10s. to be kept as in premium 6—Four pounds; Mr. Unthank, Netherscales.

9. Second best ditto, Two pounds—No competition.

10. Best short-horned cow or heifer, in calf or in milk*—Four pounds; to Mr. Watkin, Plumpton.

* The cow must have produced a calf within nine months of the show.

11. Best two-year-old short-horned heifer—Three pounds; to Mr. Benn, Lowther. (Mr. Watkin, highly commended.)

12. Best one-year-old heifer, of any particular breed—Two pounds; to Mr. Watkin. (Mr. Saunder's heifer highly commended).

CLASS III.—HORSES.

13. Best brood mare for general purposes of agriculture—Three pounds; to Mr. Nicholson, Blencairn. (Mr. Unthank's highly commended.)

14. Best coaching brood mare; to Mr. Foster.

15. Best two-year-old coaching gelding—One pound ten shillings; to Mr. Moorhouse, Newton Rigg.

16. Best two-years-old coaching filly—One pound ten shillings; to Mr. Unthank.

17. Best one-year-old coaching gelding — One pound; to Mr. Brunskill, Sewborrens.

18. Best one-year-old coaching filly—One pound; Mr. Fair, deserving.

19. Best two-year-old carting gelding or filly—One pound ten shillings; to Mr. Kitchen, Plumpton.

20. Best one-year-old carting gelding or filly—One pound; to Mr. W. Bowstead, Hackthorpe.

H. HOWARD, ESQ.'S PREMIUM.

21. H. Howard, Esq., of Greystoke Castle, offers for the best three-years-old gelding or filly, by a thorough-bred horse—Four pounds; to Mr. Moorhouse.—(This class very highly commended.)

CLASS IV.—SHEEP.

22. Best Leicester ram, being an approved stock-getter, engaged to be kept during the succeeding season within the limits of the society—Four pounds; to Mr. Saunders.

23. Second-best Leicester ram, do., do.—Two pounds; to Mr. Barrett.

24. Best pen of five Leicester ewes, which have

reared lambs the same season—Two pounds; to Mr. Watkin.

25. Best pen of five Leicester gimmer shearlings—Two pounds; to H. A. Aglionby, Esq.

26. Best black-faced ram, being an approved stock-getter, as in premium 22—Two pounds; to Mr. Spedding.

27. Second-best black-faced ram, as in premium 22—One pound; to Mr. Pattinson, Renwick.

28. Best herdwick ram, as in premium 22—Two pounds; to Mr. Bowman, Askham.

29. Second-best herdwick ram, as in premium 22—One pound; to Mr. Bowerbank, Berrier.

30. Best pen of ten black-faced ewes, having reared lambs this season upon the hills or heath, selected from one stock, bred in the district, and brought down from the hills or mountains where bred, not having been previously grazed on good land—Two pounds; to Mr. Abbot.

31. Best pen of five black-faced gimmer shearlings, bred as in premium 30—Two pounds; to Mr. Abbot.

32. Best pen of ten herdwick ewes, bred as in premium 30—Two pounds; to Mr. Ellwood, Thorpe.

33. Best pen of five herdwick gimmer shearlings, bred as in premium 30—Two pounds; to Mr. Bowerbank, Lawside.

CLASS V.—PIGS.

34. Best boar of the most approved breed, under three years old, being an approved stock-getter, engaged to be kept within the limits of the society during the succeeding season, for the use of the same, at 5s. each—Three pounds; to Mr. Benn, Lowther.

35. Best breeding sow, which has had pigs within four months, or in pig, of the most approved breed—Two pounds; to Mr. Watkin.

36. Second-best breeding sow, as in premium 35—One pound; to Mr. Fair.

37. For the cottager's, labourer's, or artizan's best fat pig under eighteen months old—Ten shillings—No competition.

CLASS VI.—REWARDS.

These prizes were awarded to labourers.

CLASS VII.—HUSBANDRY IMPLEMENTS, SEEDS, AND ROOTS.

Mr. Watson, paring plough, 7s. 6d. Mr. Nich. Pyning, common plough, 10s., very deserving. Mr. W. Boustead, seed oats, a very deserving sample, 10s. Mr. J. Benn, hybrid turnips, 5s. Mr. J. Benn, mangel wurzel, 5s. W. H. Parkin, Esq., showed good specimens of yellow bullock, lettuce top Swedes, mangel wurzel, and potatoes, to which was awarded 10s.

SHORT-HORNED CATTLE.

Bull calf, calved since last September show, age to be considered, 10s.; to Mr. Parker.

Heifer calf, calved since January 1st, 1842, age to be considered, 10s.; to Mr. Watkin.

Heifer calf, calved since last September show, age to be considered, 10s.; to Mr. Watkin.

Two-years-old bullock, 10s., deserving; to Mr. Preston.

Year-old bullock, 10s.; to Mr. Copley.

Lot of six three-year-old bullocks, 10s.; to Mr. Fair.

Lot of six two-year-old bullocks, useful grazing cattle, 10s.; to Mr. Fair.

Pair of heifer calves, age to be considered, 10s.; to Mr. Watkin. Mr. Benn highly commended. Here the judges had a difficulty in deciding.

A bull of any age; Mr. Benn. A very good bull.

Best cow, 20s.; to Mr. Benn.

Best bull; to Mr. Wm. Boustead.

HORSES.

Three-years-old colt, 10s., by a blood horse; to Mr. Moorhouse.

Foal, age to be considered, by a blood horse, 10s.; Mr. Howe, Kettleside.

Foal, age to be considered, 5s.; to Mr. Barrett.

Pair of horses, suitable for agriculture, 10s.; Mr. Bell, Winder Hall.

Draught mare, 10s.; to Mr. Bell.

Hackney pony, 10s.; to Mr. Ramsay.

Draught horses, 10s.; to Mr. Benn.

Three-years-old coaching horse, not by a thoroughbred horse, 10s.; to Mr. Wilson, Timpron.

Four-years-old ditto, 10s.; to Mr. Wilson—highly commended.

CATTERLEN STAKES.

Sweepstakes of 5s. each, with two sovereigns added by Mr. David Bird, for the best foal, by Young Petteril; to Mr. Bird.

SHEEP.

Five fat wedders of any breed, 10s.; to Mr. Benn. Very good.

Five black-faced wedders, 10s.; to Mr. Benn. Very good.

Leicester tups of any age, 5s.; to Mr. Watkin.

Pen of twenty Leicester ewes, 5s.; to Mr. Watkin.

Leicester tup lamb, 5s.; to Mr. Watkin. Very deserving.

Five Leicester ewes, 10s.; to Mr. Watkin.

Leicester tup lamb, 5s.; to Mr. Watkin. Very deserving.

Five Leicester gimmers, 10s.; to Mr. Watkin.

Matches.—Leicester gimmer shearling; to Mr. Harrington.

Five do. do. lambs, 5s.; to Mr. Watkin. Deserving of notice.

PIGS.

Boar of any age, 10s.; to Mr. Watkin. Commended.

Sow which has had pigs within four months, 10s.; to Mr. Watkin.

Pen of two pigs of the same litter, 10s.; to Mr. Watkin. Very deserving.

CROPS, &c.

General crop of turnips, not less than ten acres, soil and situation to be considered, 20s.

Crop of Swede turnips, not less than two acres, do. do., 10s.

Crop of potatoes, not less than two acres, do. do., 10s.

Match.—Best four acres of Swede turnips.

EXTRA CATTLE.

Mr. Hill's bull, highly commendable; Sir G. Musgrave, a bullock, a noble animal; Mr. Watson, of Penrith, a very good heifer; Mr. Watkin, four heifers, highly commendable; Lord Lonsdale, a very good heifer; Mr. Smith, some sheep, very deserving; Mr. Watkin, five tup lambs, very deserving.

JUDGES.

Cattle.—Mr. Wood, of Kimbleworth; Mr. Hunt, of Corbridge; and Mr. Harrison, of Low Field.

Horses.—Mr. Fawcett, of Scaleby Castle; Messrs. Adcock and Stimpson, from Northampton.

Black-faced Sheep.—Mr. Atkinson; Mr. J. Bowstead; Mr. Powley, Thrimby Grange.

Implements.—Mr. Barrett, and Mr. Benn.

The Vice-Chairman said, there was, he believed, one universal feeling as to the importance to be attached to agricultural societies generally; and of their great value none were more thoroughly convinced than himself. In the progress of the Penrith society all present, he was sure, most heartily rejoiced; great good had undoubtedly resulted from it; and he sincerely hoped that it would ultimately accomplish all the objects for which it was established. What he had now said would not, he trusted, be considered an improper preface to the toast of the judges, whose health he was now about to propose. In all such societies the aid of skilful and impartial men to adjudge the prizes was absolutely necessary; it was desirable also that they should be from a distance, not only that they should be free from bias, but free from the suspicion of it. To such men they were that day indebted; and he felt assured that the awards which they had made would give universal satisfaction. They had taken great pains to ascertain the qualities of the stock submitted to their inspection; they had shown great skill in the selection of those animals which were most valuable; and they had discharged their duties with the strictest impartiality—without favour or affection. He should, therefore, propose the health of the judges, with three times three. Drunk with great applause.

Mr. Wood, of Kimblesworth, returned thanks for himself and the other judges. If their decisions had given that satisfaction which he had a right to infer from the cordial way in which their healths had been proposed and drunk, they could not but feel amply rewarded for their trouble. As had been justly observed by the secretary, in the report they had just heard read, they had had great difficulty in deciding to whom some of the premiums ought to be awarded. This, he thought, would be readily granted to be the case, when they saw that some of the animals which had got the prizes at a recent exhibition not far distant, had here been placed only second. These decisions had not been come to without grave consideration, and the exercise of the best skill they possessed. (*Applause.*) He could with great sincerity congratulate the meeting on the beautiful exhibition they had that day witnessed. He had been in the habit of attending many similar exhibitions in various parts of England; but he must say that the animals shown that day would do no discredit to any exhibition in the kingdom. (*Applause.*) No better animals than some which had been shown that day could be produced by any society or in any place. He again thanked them for the honour conferred upon him, and to wish the society every success. (*Applause.*)

The Secretary then read the Inspectors' report, as follows:—

INSPECTORS' REPORT FOR 1842.

To the Committee of Management of the Penrith Agricultural Society.

Gentlemen,—Having discharged to the best of our abilities the arduous and responsible duties of the office entrusted to us, we beg to lay before you our report. The superior management of the different farms, and the excellence of the several stocks and crops we have inspected, far exceeded our expectations. As the competition was not great, but in some cases the merits were in our judgment so nearly balanced, we have really had considerable difficulty in awarding "the palm of victory." We have, however, had the satisfaction of being unanimous in all our decisions.

We remain, Gentlemen, your's, &c.

John Longrigg.
Isaac Young.
John Fisher.

CLASS I.—FARMS.

Premium 1. To the tenant and resident occupier of any farm, dependent on farming exclusively for a livelihood—the farm being not less in quantity than 150 acres, who shall have the same properly subdivided with fences suitable to the soil and situation, in the neatest and most exact order, water-courses, water-banks, roads, gates, stiles, farm-yards, &c., included, judicious draining, the arable land under the most approved course of cropping, and also the grass land in the neatest and best condition, &c.—soil and situation to be considered, 8*l*. One competitor. Awarded to Mr. Bowerbank, Berrier. No competition; but deserving great credit.

2. To the tenant and resident occupier of any farm dependent upon farming exclusively for a livelihood, not being less in quantity than fifty statute acres, nor more than 150 acres, who shall have the same in the neatest and most exact order, as in premium 1. Four competitors. Awarded to Mrs. Robson, Greenbow.

3. To the tenant or resident occupier of any farm who shall produce the best crop of turnips, according to the nature and quality of the land, thoroughly cleaned from weeds, and equally thinned—the number of acres to be in proportion to the quantity of arable land in such farm, 3*l*. Five competitors. Awarded to Mr. Boustead, of Hackthorpe Hall.

4. To the resident occupier of any farm, who shall produce to the inspectors, at the September survey, the best general stock of store cattle, including horses, cows, sheep, pigs, &c., according to the extent and quality of the farm, the same being not less than sixty statute acres; the whole of the stock on such farm to be exhibited, 5*l*. Three competitors. Awarded to Mr. Boustead, of Hackthorpe Hall.

5. To the person who shall produce the best crop of turnips from bone manure, 2*l*. Four competitors. Awarded to Mr. Bowerbank, Berrier. This premium is given by Mr. M. Robinson, of Stockbridge Mill, and Mr. Mitchell of Bolton Mill, bone dust manufacturers.

Mr. Crackanthorpe said the duty had devolved upon him of proposing the healths of a class of gentlemen to whom they were also much indebted. In all that had been said of the skill and impartiality of the judges he most heartily concurred; at the same time, he thought they were equally indebted to those gentlemen who acted as inspectors of the farms entered for competition, whose report they had just heard read. Probably the same amount of skill and judgment was not required in the discharge of their duties, which was called for in those who had to decide upon the stock brought before them; but the office required great activity and sound judgment, and these, he thought, had been eminently exhibited by the inspectors on this occasion. Their report, he had no doubt, would give great satisfaction, exhibiting as it did a thorough knowledge of all that made a farm valuable. He should, therefore, propose the healths of the Inspectors, with many thanks for their attention to the business entrusted to them. Drunk with three times three.

Mr. Longrigg returned thanks, in what we have no doubt was a neat and appropriate speech, but which we had not the good fortune to hear, owing to the noise which prevailed at the time.

Mr. Howard said, it had been entrusted to him to propose the healths of a body of men for whom he had a very high respect; and to be ranked amongst whom he had tried for many years without success; he meant the successful candidates. (*Applause.*) Amongst this body he was glad to find some of the most intelligent and enterprising tenants of the district. He was always delighted to see the principal prizes carried off, not by those who cultivated the land for pleasure, but by those who cultivated it by way of business, and for the purpose of obtaining a livelihood. To himself it gave peculiar pleasure to see one of the prizes awarded to the cultivator of a farm amongst the highest lands in the county, and which before had not been brought into competition with land more favourably situated. Those who, like the inspectors, had ridden round the district, must have been gratified to see the great improvements in the system of management which had been introduced within a few years. It was now, indeed, generally excellent throughout the district. (*Applause.*) In the selection and rearing of stock great judgment and skill were shown, and those who had shown so much enterprise had done honour to themselves and to the district, upon which they had conferred a great favour. Although there had lately been something like a pause amongst the owners of cattle, owing to the introduction of foreign animals, he did not apprehend that much injury would be suffered by the farmers. It might be presumptuous in him to give an opinion on the subject, with so little experience as they had yet had; but he felt satisfied that those who reared good stock would always find a good market for the disposal of it. (*Applause.*) Those who had travelled upon the continent had always been struck with the great inferiority of the beef and mutton as compared with that which was produced in England. (*Applause.*) In the class of servants to whom premiums had been awarded, he was gratified to see so many who had lived with the same masters for such a number of years. This was an excellent trait in their character, and deserved all the praise he could bestow upon it. (*Applause.*) It was difficult, amongst so many who deserved, notice to select a name with which to couple the toast he was about to give; and he did think at one time of taking the list and reading it alphabetically: but there was one who happened to be almost a stranger amongst them, and by way of giving him a welcome, he would couple the name of that gentleman with the toast. He then gave Mr. Barrett, of Maiden Hill, and the successful candidates, with three times three. Drunk with great applause.

Mr. Barrett, in returning thanks in the name of the successful candidates, said he was sorry they had not fixed upon one more capable than himself to discharge that duty; certainly he had not thought that he should have been called upon to address the meeting, either on his own behalf or on that of others. He felt, however, duly grateful for the honour which had been conferred upon himself and the other competitors. Farming was a pursuit in which he had always taken pleasure: and the stock which he had seen that day had afforded him much gratification. As to the general cultivation of the district, he had stirred too little from home to be able to give an opinion upon it. His great object was to see the land well ploughed and cleaned, the crops carefully taken from it; for he believed that he who cultivated the land well conferred a service upon his country. (*Applause.*) It always gave him great pleasure to know that he did any thing which his neighbours thought worthy of following. He did not presume to recommend any man what he should do; but if they would watch his proceedings, and if he did anything from which they could derive a benefit, he would rejoice if they adopted the same course. It was, indeed, to him the greatest pleasure in life to do anything that could benefit others, and especially his neighbours. (*Applause.*) They were sent to plough and till the soil, and it was their duty to do it in the best way they were able. With respect to foreign cattle, he agreed with what Mr. Howard had said. The English soil, if properly looked after, would always produce that which would make England independent of foreign countries; and he had no fear but good stock would always find a good market. In conclusion, he would say, that he should be glad to see all whom he was then addressing, whether farmers or others, at his house to take a glass of his ale—(*applause*)—for he could assure them he did not brew his ale merely to drink it himself, and he hoped every good Englishman would always have a friend, and a glass of good ale to give him. (*Applause.*)

Mr. Crosby, of Kirkbythore, said he had to propose the healths of a very meritorious body of men, though they were not at present in the most enviable position—he meant the unsuccessful candidates; and with that toast he would beg to couple the name of Mr. Howard, of Greystoke. He would also take that opportunity of congratulating the meeting on the progress which the society had made in a very few years, as was evinced by the excellence of the stock they had that day seen exhibited. He was glad to see that, in so many instances, the tenants were going a-head of the landlords, — that they were quite awake, if others were sleeping; and he trusted in this way they would go on. Drunk with three times three, and much applause.

Mr. Howard returned thanks. He had always found it easier to return thanks as an unsuccessful candidate, than to propose the healths of those who had been successful; but as two speeches, following each other, were rather too much, he had requested the secretary to put down the name of some other gentleman to return thanks for the last toast, but was told that all the other unsuccessful candidates had left the town. (*A laugh.*) He was sorry for this, because they had thereby missed hearing Mr. Barrett's very hospitable invitation to taste his ale. He would only now say that he hoped he should be more successful next year, and that at least, if he was not able to win, he would have the wisdom to improve by what he saw done by others. (*Applause.*)

The Chairman next proposed "the Committee of Management." He had for several years had an opportunity of seeing their activity and admiring their zeal. Of these qualities no one had given greater proof than the chairman of the committee, Mr. Tinkler, whom he was sorry not to see in the room at present. He would, however, couple the toast with another very useful member of the committee, Mr. Varty, of Stagstones. Drunk with three times three.

Mr. VARTY returned thanks.

Col. LOWTHER, in a complimentary speech, proposed the health of the chairman, with was drunk with much cheering.

The CHAIRMAN begged to offer his sincere thanks for the flattering manner in which his health had been proposed and drunk. He should ever fell most anxious to do whatever lay in his power to aid the society, so long as it continued to promote the interests of the tenantry and yeomanry of the county.

Mr. CRACKANTHORPE proposed the health of the treasurer and secretary—Mr. Fair and Mr. Smith. Of the efficiency of the secretary they had had ample demonstration that evening, in the ready way in which he had furnished a list of the successful candidates; and he had no doubt but those gentlemen would find the treasurer equally efficient when they called upon him for their respective premiums. The toast was drunk with three times three.

Mr. FAIR acknowledged the compliment that had been paid to Mr. Smith and himself, and could assure the meeting that they would ever be most anxious to discharge their duties in such a way as would best promote the interests of the society.

The VICE CHAIRMAN, in proposing "Success to the Royal British Agricultural Society," said it was a society highly deserving of support. It had now attained a most influential position, and was constantly diffusing the best information. He strongly recommended those who had not already done so, to furnish themselves with the reports and other publications of the society, as containing a vast quantity of the most valuable information, from which all might derive a profit. There were, he believed, several members of the society present. Before another year it was his intention to become a member himself; and he certainly wished the society every success; for it was to it that all other societies must look as a model. He would couple the toast with the healths of Mr. Benn and the other members of the society present. Drunk with three times three.

Mr. BENN returned thanks. He was sorry the duty of returning thanks for so noble a society had fallen upon so humble an individual. He had had great pleasure in being connected with the society; and he was sure if the advantages it held out were fully known, there were few in that room who would not soon enrol themselves as members. Probably, in the course of a few years, that society might hold one of its exhibitions at some convenient distance — say Newcastle; and if so he doubted not many in this part of the country would be induced to become competitors with their southern and northern brethren. They had already the stock fit for it, and he was sure neither the spirit nor the enterprise would be wanting; and he feared not but many would prove successful. *(Applause.)*

Mr. CROSBY proposed "Prosperity to the Carlisle Agricultural Society." The Carlisle and Penrith societies might be said to be twins, and it was pleasing to see how useful they had been to each other. He had attended the meetings of the Carlisle society for many years; he had partaken of the hospitality of its members; and he admired them as excellent farmers, and as good men. He was glad to see several of the members present: and he would couple with the toast the healths of Mr. Hewitt, of Burgh, and Mr. Studholme. Drunk with three times three.

Mr. HEWITT said he felt deeply obliged by having his name so kindly introduced; though he regretted that he had not been so useful to the society as many whose names might have been selected for the honour. The Carlisle society was established at the same time as that of Penrith; and it had gone on ever since improving in its stock, and improving in its funds. But such a sight as had been seen to-day, they might well envy, for such an exhibition of bulls he had never before seen: indeed, he had been so astonished by them, that he could scarcely look at anything else. Within his remembrance, farmers might go to see fine animals of the short-horn breed, but they never dreamed of being possessed of such themselves—the high price frightened them; and they said such animals might suit great landed proprietors, but were unfit for farmers. Now, he was glad to see a change of feeling—three of the best bulls exhibited that day belonged to tenants. *(Applause.)* Of such tenants their landlords might well be proud, and the district was proud of them. He agreed with Mr. Howard as to the probable effect of the tariff. If it affected prices at all, it would be the prices of inferior animals; and therefore his advice would be, to get the best stock they could, and improve as much as possible, and they need have no fear but they would obtain remunerating prices. *(Applause.)* The principal part of the bulls shown that day were from the Gainford stock—the best and purest in the country; and he was glad to see the farmers had had the spirit to go to the price necessary for securing that stock. He remembered once giving 10*l.* for a calf, and how much it had been talked about at the time as an extravagant price. Now, that sum had been given for a bull calf by a farmer; and what was the consequence? Why, he had had 300*l.* bid for the bull which he had reared from that calf. *(Applause.)* This showed how profitable it was to have the best stock. Again he recommended them to go on improving, and not to fear but they would obtain adequate prices.

The VICE-CHAIRMAN proposed "Success to the Appleby and Kirkby Stephen Association." It was yet but young in years; but young things had a tendency to grow and improve, and so he doubted not would that society, under the able presidency of his friend Mr. Crackanthorpe, with whose health he would connect the toast, and drink it with three times three.

Mr. CRACKANTHORPE, in returning thanks, said the Appleby society was certainly but yet in its nonage; but he feared not but it would flourish. It would hold its second meeting on Thursday the 6th, and he should be glad to see as many of those around him, as could make it convenient to attend at the meeting. A society so young could not expect to compete with what they had seen that day; but they were determined to do their best. Before he sat down he wished to propose the health of their worthy vice-chairman, Mr. Hassell. The old proverb said "good wine needed no bush," and he was sure the character of Mr. Hassell needed no eulogium from him. He lived constantly amongst them; and in the zealous discharge of every duty which devolved upon him, he knew no man who surpassed him. Drunk with three times three, and much cheering.

Mr. **Hassell** said he should indeed be wanting in feelings of gratitude, if he did not express in the warmest terms his acknowledgments of the high honour conferred upon him by the manner in which his health had been proposed and drunk. He felt, indeed, that he was unworthy of the praise which his worthy friend had been pleased to bestow upon him. It was true he lived amongst them, and discharged various public duties to the best of his ability, and he trusted to the advantage of his neighbours. He was happily in the possession of a fortune, ample for his wants; and through the kindness of an excellent father he possessed the advantage of a good education. But these he looked upon as the "talents" entrusted to him to be laid out for the benefit of others; and if he had effected any good by them, he ascribed it rather to the cheering encouragement and willing support of his fellow-countrymen, than to any merits of his own. *(Cheers.)* He had for many years acted as a magistrate of the county; and in discharging the important duties attached to such an office, he had never looked to the right hand or to the left, but endeavoured to the best of his judgment and ability to secure justice to all. He again thanked them for the compliment paid him, and sat down amidst long continued applause.

The **Chairman** next gave "The Liberty of the Press," coupled with the names of the editors of the *Journal* and *Patriot*,—a compliment which was, of course, duly acknowledged.

Mr. W. **Bleaymire** had great pleasure in proposing the healths of a body of gentlemen who had very onerous duties to perform, and who were always found ready to discharge them with zeal and fidelity—he meant the magistrates of Leath Ward. Drunk with three times three.

Mr. J. **Salkeld** returned thanks; and could assure the meeting that if the magistrates had hitherto performed their duties properly, they would be no less inclined to do so in future.

The **Vice-President** said it was now his duty to propose the health of the Vice-President elect, Mr. R. Tinkler; and he must say he was glad the choice had fallen upon so excellent a man. He was a good agriculturist, and would fill the chair which he (Mr. Hassell) now occupied more effectively than it had been filled that evening. Drunk with three times three.

The **Chairman** gave the health of Sir George Musgrave, as a most liberal supporter of the society; and it was drunk with three times three and much applause.

By Mr. S. **Watkin**—"Lady Musgrave and the Ladies of Cumberland." Drunk with three times three.

Mr. **Crosby** begged to propose the healths of a body of men intimately identified with the counties of Cumberland and Westmoreland—he meant the yeomanry. As the friend of agriculture, and having himself whistled at the tail of the plough, he could not but feel the consequence which the two counties derived from those men. In no other county could such a body be found; and he trusted they would be long cherished by the gentry. Drunk with three times three.

Colonel **Lowther** said, having drunk the yeomanry, he knew no more fitting toast to follow, than the bonny lasses of Cumberland and Westmoreland, and he was sure he need not ask, that it be drunk with nine times nine. Much cheering.

The meeting soon afterwards separated.

SOUTH CHESHIRE AGRICULTURAL SOCIETY.

The annual meeting of the South Cheshire Agricultural Society was held at Sandbach on the 13th October. The day was very fine, and the attendance at the meeting was consequently very numerous. Five years have now elapsed since this society was instituted, and we are happy to find that it continues to be supported with the greatest vigour; indeed a growing interest appears to be taken in its operations by all classes of agriculturists. The stock was exhibited in a field adjoining the residence of Mr. Williams, solicitor, of Sandbach, to whom it belonged, and who had kindly lent it for the use of the society.

The judges on the occasion were: Stock—Mr. Dawson, Mr. Allman, Mr. Hammond, and Mr. Scotson; Cheese — Mr. Cox; Turnips — Mr. Woolf; Cottages—Mr. Carter; and Farms—Mr. Crane and Mr. Robinson.

The stock exhibited, though not quite so numerous as that shown at Nantwich last year, was of a very superior quality. We must direct the attention of our readers to a few of the animals which more especially struck our notice in the field, as worthy of being particularized. First, then, with regard to the bulls. For the first prize, a premium of 10*l.*, there were about a dozen competitors. The bull shown by Mr. Prescott, of Norcroft, was an extraordinarily fine animal, and of capital make; and the judges could have had no hesitation in awarding to it the premium. Mr. Plumley, of Shipbrook Hall, showed a fine looking beast, and won the second prize with it. Both these bulls were two year olds; when yearlings they were shown against each other at Nantwich, and Mr. Plumley was then victorious. The unsuccessful bulls were also very good ones, particularly those belonging to Mr. Woolf, of Haslingden, Mr. Warburton, of Sandiway Head, Mr. Ravenscroft, of Leighton, Mr. Remer, of the Hill-top, and Mr. Taylor. The premium for the best yearling bull was adjudged to Mr. Palin, of Stapleford. There were some very fine useful looking cows for dairy purposes shown. The premium was won by Mr. Palin, with an animal which attracted much attention, and was highly approved of. It was four years old, short-horned, and gained the society's medal at the exhibition last week in this city, where it was not shewn for the premium. The bull with which Mr. Palin won the yearling prize came out of this cow. There was not much competition between the calving heifers; but the limited number shown were of very good quality. The first prize was won by Mr. Prescott, and the second by Mr. Woolf. The show of stirks was more numerous, and many good pairs were amongst them; Mr. Moreton's, of Weaver Bank, were decidedly the best. The horses for agricultural purposes were scanty in number; they appeared to be of a useful kind, but we should not be justified in saying there was anything superior about them—a better show may take place next year. The first prize was won by Mr. Carter, of Shipbrooke, and the second by Sir Philip Egerton. The number of pigs in the field was very tolerable, and of a capital quality, more especially the sows. A sow with a litter of eleven pigs, belonging to Mr. Wright, of Minshull, was much admired; and the butchers seemed to regard the lot with a very longing eye. The best boars were the property of Mr. Lewis, of Cote Brook, and Mr. Wooldridge, of Sutton. No sheep were in the field.

Amongst the agricultural implements on the ground we noticed a straw cutter, corn bruiser, improved subsoil plough (of the same description as that used by the winner of the premium at the society's ploughing match on Wednesday); a scarifier, on a very improved principle of widening or narrowing it, by Mr. Harkes, of Mere. Mr. Corns, of Barbridge, also showed a few improved implements. They all appeared to be of a useful character.

Some good specimens of draining tiles were exhibited. Those shown by the Tweeddale Company are made by the patent Tweeddale machine, and are considered both cheap and durable. Mr. Hitchen, of Alpraham, also showed some excellent specimens of draining tiles, which were highly approved of by the best judges. We understand that Mr. Hitchen offered to show the best specimens of draining tiles against any manufacturer in the district for a sweepstakes, but the offer was not accepted.

The only specimens of roots, seeds, &c., in the field, were brought by our respected neighbours, the Messrs. Dickson, of this city. Amongst them were the following:—Of wheats—Hopetoun, Hunter's, Chedham, and other approved varieties; several samples of oats; some fine bulbs of their improved Swedish turnips; hybrid, yellow, and Scotch mangel wurzel, &c.; twenty sorts of potatoes; fifty sorts of apples and pears; an American cross-cut saw, draining tools, Lord Hay's tile mould; and specimens of the *Araucaria Imbricata*, &c., &c.

We must conclude our remarks on the stock, by a word or two of advice both to the farmers and their landlords, and hope it will be received in as good part as we intend it—we speak advisedly, and from the best authority. And while we most cheerfully congratulate the agricultural interest on the very marked improvement which has taken place in the breeding of stock since the South Cheshire Agricultural Society commenced its labours, yet in many cases it will hardly be denied there is room for still farther improvements. The great fault in the system pursued by farmers in many parts of Cheshire is, that sufficient attention is not paid to the *breeding* of cattle. Too many different sorts are introduced, some of which might be dispensed with, much to the benefit of the owner; for when Irish, Scotch, short-horned, Ayrshire, Devon, &c., are indiscriminately mixed, it cannot be matter of surprise if the stock should be deteriorated, and rendered comparatively unfit for the purposes for which they are chiefly required in such a county as Cheshire. We think that the breeds best adapted for a dairy county are the pure Devon, the Ayrshire, and the short-horned, and that a cross between any of these will produce good milkers, and be of considerable advantage to the farmer. Undoubtedly the short-horned are justly entitled to the preference over any other description of stock; they soonest arrive at maturity, they grow to a large size, and give a greater quantity of milk than any description with which we are acquainted. The breeding of short-horned, therefore, cannot be too strongly recommended. With respect to sheep, we think the Welsh are ill adapted for Cheshire; they are too small, and have no carcasses. They may indeed answer very well on poor land, in the hilly parts of the principality, but do not suit the better lands in South Cheshire. We know of no kind of sheep better adapted for this county than the Cheviot and the Leicester.

Much attention has lately been devoted to draining, and it is a subject on the importance of which too much cannot be said. There is a difference of opinion, however, amongst practical men, as to the party by whom it should be performed; but as its importance and necessity is so universally acknowledged, we cannot help inclining to the opinion that it would be done more effectively if done by the landlords themselves, who would of course charge the tenant a per centage upon the sum expended. The tenant would then be enabled to lay out his capital upon such other improvements as might be considered desirable upon his farm, and both himself and his landlord would in the end derive mutual benefit. We understand that this system has been practised on a large scale by Lord Derby on his extensive estates, as well as by many other gentlemen connected with the Royal Agricultural Society of England; and it is thought that if these examples were more generally followed, the permanent prosperity of agriculture would be the more likely secured.

Having said so much with reference to the exhibition, we must now notice the proceedings at

THE DINNER.

The dinner was held at the George Inn, soon after three o'clock, where the best arrangements were made for the comfort and convenience of the guests. We were happy to see a more numerous attendance of gentlemen of landed property than were present at the last meeting at Nantwich, which must be very encouraging to the farmers generally. Lord Combermere was to have taken the chair, but was unavoidably prevented from attending; and we are sure that our esteemed county member, Sir Philip Egerton, would have been present, had not distance rendered it impossible. About a hundred and fifty gentlemen and farmers sat down to dinner.

John Tollemache, Esq., M.P., occupied the chair, and Mr. E. H. Martin, of Henhall Cottage, near Nantwich, and Mr. Wild, of Wareham, the vice-chair.

The tables having been cleared, and the cloth removed, the usual loyal toasts were drunk.

The SECRETARY then, at the request of the chairman, read the names of the successful competitors for the various premiums offered by the society.

The following are the Premiums awarded:—

CLASS I.—CHEESE.

1.—To Mr. Norman, Stanthorne, for the best dairy of not less than 50lbs. weight each, 15*l*.

2.—To Mr. Basford, Bartomley, for the best dairy of cheese, not less than 20lbs., or more than 50lbs. weight each, 10*l*.

3.—To Mr. George Ruscoe, Rushton, for the second best dairy of cheese, not less than 20lbs. or more than 50lbs. weight each, 5*l*.

4.—To Mr. John Young, Tiverton, for the best dairy of cheese, not less than 30lbs. weight each, none having been made on the Sabbath day, 20*l*.

(This is the gift of the Marquis of Cholmondeley and J. Tollemache, Esq., M.P.)

CLASS II.—BEST CULTIVATED FARMS.

1.—To Mr. Vernon, Willingtons, as the resident tenant, upon a rack rent, of a farm of not less than 150 statute acres, 20*l.*

Mr. S. Ravenscroft strongly recommended by the judges.

2.—To Mr. Dobel, Leftwich, as resident tenant, upon a rack rent, of a farm not less than 80 statute acres, and not exceeding 150 statute acres, 15*l.*

3.—To Mr. Fairhurst, Minshull, as resident tenant, upon a rack rent, of a farm of not less than 40, and not exceeding 80 acres, 10*l.*

4.—The occupier of any farm of not less than 60 statute acres, who shall have the same in the best and most complete state of management; no claimant.

5.—To Mr. Garnett, Stoke Hall, as resident tenant, upon a rack rent, of any holding, not less than 50 acres, who shall within one year previously to the 1st day of September, 1842, have expended the largest sum of money in the purchase of bone manure in proportion to the extent of his farm, the same being applied upon permanent pasture, 10*l.*

6.—The resident tenant, upon a rack rent, of a farm not less than 20 statute acres, and not exceeding 50, who shall have covered the largest quantity of land with bones, upon permanent pasture, awarded to Mr. Geo. Ruscoe, Rushton, 5*l.*

Draining.

7.—To Mr. Lowe, Brereton, as resident tenant, upon a rack rent, of a farm not less than 50 statute acres, who has drained the most land within one year, previously to the 1st September, 1842, 10*l.*

Irrigation.

8.—To Mr. Joseph Morrey, Burland, as resident tenant, upon a rack rent, of a farm, who has irrigated the greatest quantity of land, in the best manner, according to the extent of his farm, within the last three years, the land irrigated being not less than three acres, 5*l.*

9.—To Sir Philip de Malpas Grey Egerton, Bart., as the occupier of a farm, having the best crop of Swedish turnips, not being less than five acres, which was grown with manure not arising from the farm, 5*l.*

10.—To Mr. Dobell, Leftwich, for the best crop of Swedish turnips, not being less than two acres, which was grown with manure not arising from the farm, 2*l.*

CLASS III.—Ploughing Match.

11.—To Mr. G. Lowe, Brereton, as owner of a team, 10*l.*

This is the gift of Sir C. Shakerley, Bart.

12.—To Mr. John Vernon, Willingtons, as owner of a team, 4*l.*

13.—To Mr. John Lea, Weaverham, as owner of a team, 2*l.*

14.—To Jas. Beckett, as servant to Mr. Lowe, 3*l.*
To Josh. Ball, as servant to Mr. Vernon, 2*l.*
To Joseph Thompson, as servant to Mr. John Lea, 1*l.*
To Robert Cannon, ploughman to Mrs. Jones, by the recommendation of the judges, 10s.

CLASS III.

15.—To Mr. Prescott, Norcroft, for the best bull of any age, with a view to the dairy, 10*l.*

16.—To Mr. Plumbley, Whatcroft, for the second best bull of any age with a view to the dairy, 5*l.*

17.—To Mr. Palin, Stapleford, for the best yearling bull bred in South Cheshire, 5*l.*

18.—To Mr. Palin, Stapleford, for the best dairy cow, 7*l.*

19.—To Mr. Prescott, Norcroft, for the second best dairy cow, 2*l.*

20.—To Mr. Prescott, Norcroft, for the best calving heifer, bred in South Cheshire, 4*l.*

21.—To Mr. Wolf, Haslingdon, the second best heifer, 1*l.* 10s.

22.—To Mr. Moreton, Minshull Vernon, for the best pair of stirks under two years old, and bred in South Cheshire, 3*l.*

23.—To Mr. Carter, Shipbrooke, second best stirks, 1*l.* 10s.

24.—To Samuel Moreton, labourer, for the best stirk, being his own property, and under eighteen months old, 2*l.*

25.—To Mr. Woolrich, Sutton, for the best boar pig under three years old, 5*l.*

26.—To Mr. Lewis, Cote Brooke, for the best boar pig under one year and six months old, 5*l.*

27.—To Mr. Wright, Minshall, for the best breeding sow under three years old, 3*l.*

28.—Best breeding sow, one year and six months. —No claimant.

29.—To Mr. Carter, Shipbrooke, for the best pair of horses for agricultural purposes, 2*l.*

30.—To Sir P. de M. Grey Egerton, Bart., for the second best pair of horses for agricultural purposes, 2*l.*

CLASS IV.—Sweepstakes.

Two years old colt, to Mr. Cawley, Ridley, 10s.
One year old colt, to do., 10s.
There were also distributed to Class V, 21 prizes.

The Chairman said the next toast he had the honour to propose was the health of an individual well known to them, not less as a distinguished officer than as a staunch friend and supporter of the agricultural interest,—he alluded to Lord Combermere. (*Loud cheers.*) He deeply regretted the absence of his lordship, for when he came to that meeting he quite expected to have seen Lord Combermere in the chair; but he was quite sure that had it been in his lordship's power, nothing would have given him greater pleasure than to have presided over the very numerous and respectable assembly which he then saw before him. "The health of Lord Combermere." (*Three times three.*)

The Chairman said the next toast was in reality the toast of the evening—namely "Success to the South Cheshire Agricultural Society" (*loud applause.*) The present was, he believed, the fifth anniversary of this association—an association in which he had taken the greatest possible interest from its first establishment. He thought it was impossible to calculate the benefit and advantage accruing to agriculture from meetings of this description. It brought together the owners and occupiers of the soil,—it was the means of inspiring the farmers with a laudable emulation and a spirit of enterprize, which was most important so far as the welfare of agriculture was concerned,—was highly conducive to the improved cultivation of the land,—and was of the utmost advantage in improving the morals and condition of the labouring classes (*cheers.*) If there ever was a time when landlords, when tenants, when all connected with agriculture, ought to unite their efforts in rendering the soil more productive, that time was the present (*cheers.*) Of course at a meeting like that over which he had then the honour of presiding, he would make no reference to politics—it was a meeting at which politics ought to be, and were excluded, and were they attempted to be introduced, he should instantly feel it his duty to leave the chair; but without reference to politics—without reference to the question whether the distressed state of the country rendered it necessary that an alteration should take place in the import duties on foreign corn, or whether such an alteration would do anything towards alleviating the prevalent distress, they must at least be aware that an alteration had taken place in those import duties: and although he believed that this change had given no real cause of alarm whatever to the agriculturist, still he could not shut his eyes to the fact, that the very high price which had of late been obtained for agricultural produce must be reduced. It would be madness in any man to deny this; and in his opinion the only way in which the agriculturist could possibly meet it, was by adopting improved methods of cultivating his land, in order to render it more productive (*cheers.*) Under these circumstances, instead of this being the fifth, it would have been well for the county of Chester if it had been the twentieth anniversary of this association. Had twenty years ago, this Society been established, they would by this time have materially benefited by the improvements, and been better prepared for that reduction in price which to a certain, though perhaps to a very limited extent, they were now rendered liable. He did hope that these circumstances would be taken into their deliberate consideration, and that it would be an inducement both to landlords and tenants to unite their best efforts in the improvement of the soil, and by so doing, Cheshire might be rendered as productive as any county in England. (*Cheers.*) He was satisfied it was only by adopting this course, that they could supply, on fair and reasonable terms, the necessities of a growing commercial and manufacturing population—only by this, could they meet the wants of a large agricultural population, so as to render them contented and happy—only by this, could they hope to keep foreign produce out of their markets—and only by carrying agricultural improvements to the greatest possible extent, could they expect to maintain the independence and future greatness of this country. (*Cheers.*) With these remarks he begged to propose "Success to the South Cheshire Agricultural Society." (*Tremendous applause.*)

Mr. Corbett, of Darnhall, said he had now the honour of proposing a toast, which he was sure would be drunk with the greatest enthusiasm—the health of the gentleman who had that day so ably presided over the meeting; and who from the first establishment of this society, had been one of its strongest patrons and friends. (*Cheers.*) He had not only held out inducements to his tenants to improve, but had by his own example been as great a promoter of the improvement of the soil as any landlord with whom he was acquainted; and had been most particularly successful in his attempts to drain clay land. (*Cheers,*) And though draining had not as yet been practised to any great extent in this county, upon clay land, yet he must say that he (Mr. C.), as the occupier of a clay farm, had carried it on now for twenty years, and the benefit to be derived from it, he should be extremely happy to shew to any agriculturist who would come down to Darnhall, and inspect it. Where proper encouragement was given by the landlord in the use of tiles, he had no doubt it would be well met on the part of the tenant in putting them into the ground; and he might here state to those who carried on draining to any extent, that Mr. Tollemache had given him a specimen of some tiles which he had received from Suffolk, well adapted for clay draining, and which rendered the use of soles unnecessary. He had given Mr. Hitchen an order for 20,000, and Mr. Hitchen had contracted to make them for twenty-two shillings per thousand. Certainly this presented the greatest encouragement to draining, and he had no doubt that when this tile was fully introduced into the county, the price would be still further reduced. (*Cheers.*) The gentleman whose health they had last drank (Lord Combermere) was a great encourager of agriculture, but it would have been much more satisfactory to them, if they had seen him that day occupying the chair, which it was announced he would fill. At the same time, he felt it due to that meeting to apologize for his own absence on so many of these occasions; but he must assure them it was not his own fault, for nothing would have given him greater pleasure than to have met the very respectable company that he then saw before him more frequently. He would conclude by proposing "the health of their chairman," John Tollemache, Esq. (*Three times three*).

Mr. Tollemache said it was impossible for him to express the gratification he felt at the very flattering way in which his health had been proposed and received. He could assure them that he was not less sensible of their kindness, than of the unworthy manner in which he had filled the chair, to which he had been so unexpectedly called. (*No, no*). It was much to his own regret, that he was not enabled to be present at the two last annual meetings of this association; but he could assure them, that it was not from any want of interest in its operations and proceedings; for nothing gave him greater pleasure than to meet so many friends and neighbours, who, although they might differ in their political opinions, were at least united and determined to do their utmost in promoting the interests and prosperity of agriculture. He must say that he was quite undeserving of the kind way in which Mr. Corbett had proposed his health; but as a country gentleman he believed he should be found a supporter of the South Cheshire Agricultural Society so long as God spared his health, and so long as it was conducted in the very admirable way in which it was at present managed. As a landlord he felt the importance of this society, and he would promise either by granting long leases (*cheers*), or in any other manner that was likely to be beneficial, to give all the encouragement in his power to his tenantry, to make their land as productive and profitable as possible. (*Loud applause.*)

Mr. R. Wilbraham, jun., then said he had the permission of the chairman to propose the health of the judges of the day. It was quite obvious that they could not all win prizes, but he knew enough of the farmers of Cheshire to feel quite convinced, that those who had not come off victorious, would rather consider it as a stimulus to future exertions, than as a cause of dissatisfaction. They were all aware of the high character of the judges, and of the spirit of strict impartiality which marked all their decisions; and therefore he was certain that it would give the company the greatest satisfaction to drink their health—"The health of the judges of the day." (*Three times three*).

Mr. Allman said he was the only judge now in the room, and therefore it devolved upon him to return thanks for the last toast, although he was sorry it had not fallen into abler hands. With respect to their decisions, he could truly say that they had but one object in view, namely, to award the premiums to those who were most deserving of them; and to show that their decisions had been unanimous, he might state, that Mr. Dawson had set down in his book the number of the best stock, and on comparing their books afterwards, he found that they perfectly agreed. If any of the unsuccessful candidates were dissatisfied with the decisions, and thought they had not had fair play, he could only say, that he was ready to meet such persons to offer them any explanations, and to state the grounds upon which they had come to their decisions. *(Hear.)* With regard to the bulls, he must say that he thought the winner of the first premium a very superior animal. He had lately shown a bull of the short horned breed, which had been very successful. He had sent three to Cork, and had sold one of them for 100*l.*; he had also sent some to Bristol, and sold one there for 100 guineas; and if the farmers of Cheshire would pay attention to their breeding of short horns, he did not see why they should not sell them for a hundred guineas as well as himself. (*Cheers.*) With respect to draining, he had lately drained somewhere about thirty statute acres; the drains were 2ft. 9in. in depth, and after the drains had been laid, he put the subsoil plough into the land, at an angle of about 35, and about 17 inches deep. By this system he was enabled to work his land early in the spring months; he could sow his Swedish turnips in April, and transplant them whenever he might want the land for other purposes. Nothing was so beneficial to the farmer as draining, and using the Swedish turnips to a certain extent; and he thought they would do well to have always a few acres of land well drained, and the subsoil plough run on it to sow Swedish turnips and early potatoes.

Mr. PALIN enquired the number of tiles required for a statute acre.

Mr. ALLMAN: We use soil in our country, but my object is always to get the water through. The drains are generally seven or eight yards asunder on clay land.

Mr. CORBETT: It would be about 1600 to the acre, the drains being eight yards asunder.

[In answer to a question from Mr. Palin, Mr. Corbett said that the tiles which he had spoken of were put into narrow drains, and made in a wedge form, which prevented them from being broken in the usual manner, by horses treading on them.]

Mr. TOLLEMACHE observed, that he understood a person named Pettit, living near his house in Suffolk, was selling them at 18s. a thousand, coals being in that district 30s. a ton.

Mr. J. F. FRANCE said he had been requested to propose as the next toast, "The health of the Committee"—a body of gentlemen to whom they were all deeply indebted for their services, for it was impossible that there could be two opinions as to the manner in which their duties had been performed. He was happy to find that they had endeavoured to increase the prizes to cottagers and labourers, and the way in which those prizes had been contended for, shewed that they were well deserving of encouragement. The show of pigs, the appearance of their gardens, and indeed everything for which the cottagers and labourers were candidates, reflected much credit upon them *(hear, hear).* The stock exhibited in the field was not so numerous as might have been expected, but it was the opinion of the best judges that it was decidedly improved; and he had no doubt that on future occasions the stock would increase in quantity, as well as in quality. He begged to propose "The health of the Committee" *(three times three).*

Mr. F. J. FORD said he rose under feelings of embarrassment, to thank the meeting for the flattering way in which the last toast had been received. So far as their duties were concerned, he was proud to find that their labours had given satisfaction, for that was all the reward they sought. If in any instance they had erred, or if they had not done all that might be considered desirable, it must be imputed to a want of better information; but he hoped that the experience of another twelve months would give them such additional knowledge of the nature and peculiarities of the society as would enable them, on future occasions, to make any further improvements which might be considered desirable *(cheers).*

Mr. CORBETT said, with the permission of the president, he would take the liberty of saying a word or two to the commitee. He was far from wishing to detract from their merit, for no doubt they had done their utmost to promote the interests of the society. Year after year the prizes had been much improved, but he thought there was an alteration or two which might be made, and which would be attended with advantage. He would allude, in the first place, to the premium given to the occupier of the best cultivated farm. Now every gentleman must know that it was impossible for a farm on clay land to have the same appearance as a farm on dry land, however much pains might be taken with it. The season had much to do with this; for if it happened to be a wet season, the farm always looked out of order; and the large quantity of weeds to be seen on clay land would never be seen on a dry land farm. If, therefore, it met with the approbation of the committee, he would suggest that instead of one, two premiums should be given for the best cultivated farms — distinguishing, of course, between clay and dry land. The other alteration he should suggest was in the prize for the best crop of Swedish turnips. The prize was given to turnips raised from manure not made on the farm, and by that means the occupier is enabled to get a supply of fodder for his cattle, keep them in good condition, and much improve the stock generally. Now he would recommend two prizes to be given for turnips, to be distinguished, as in the case of farms, whether grown on clay or dry land. It was certain the farmer on clay land was, by the present arrangement, placed at much disadvantage; and if the two kinds of land were distinguished another year, it would afford great encouragement to him to make improvements where he had a chance of success *(cheers).*

Mr. PALIN said, as a member of the society, he quite agreed with Mr. Corbett in the remarks that had fallen from him relative to the distinction necessary to be made between dry and clay land; and he might state that that distinction was already observed by the Chester Society. By the present rules, however, many farmers were prevented from showing; because the prize was confined to crops raised from manure not made on the farm. Now many farmers could not obtain a sufficient quantity of manure, and bone-dust did not answer on all soils, and during all seasons. In one instance he had got thirty tons of turnips an acre from manure; while with bone-dust he did not get more than eight or ten tons. He therefore thought it would be advisable for the committee to consider of the propriety of giving a premium for turnips raised from manure made on the farm.

Mr. CORBETT could not agree to giving a premium for turnips raised from manure, which ought to be laid on the pastures. He had tried guano alone, and it had not succeeded very well; but by mixing it with bone-dust, it had answered admirably.

Mr. ALLMAN differed from Mr. Corbett as to the propriety of raising turnips from artificial manure. If a farmer could buy artificial manure he could buy stock, and he would recommend such farmers to keep a large stock, and make as much of the manure as possible.

The CHAIRMAN thought Mr. Allman did not consider that Cheshire was strictly a dairy county; but these were details which would be better left to the committee.

Mr. MARTIN then said he rose, at the request of the chairman, to propose the health of a number of individuals who had that day placed themselves in a very honourable position. Most of them were their neighbours, and well known to them all, and he was sure, therefore, that the toast—"The successful candidates of the day"—would be heartily received *(cheers)*. He took the liberty of congratulating those gentlemen on their success, and he was quite certain that, when they reached home that evening, they would receive a further congratulation from those whose smiles were even dearer to them than their friends' in that room. He would also advise the unsuccessful candidates not to give up in despair, but to renew their exertions in the hope of being more successful another year *(hear)*. He was sure that they had every reason to be satisfied with the decision of the judges, and they would not be deterred from bringing their stock forward another year because they had not been successful to-day *(hear)*. When the society was first established, it had many opponents. There were individuals prejudiced or ignorant enough to attribute bad motives to those who encouraged its formation. "Oh!" said they, "it is only a plan of the landlords to make themselves better acquainted with the returns of the tenants, and you'll soon find that they will have to pay higher rents for their farms." Now, this society had existed five years, and he would ask them, was there a single tenant in the room who had been visited with anything like the punishment, with which it was predicted they would be visited by their landlords? He would ask, on the contrary, had not those individuals been encouraged to go with greater confidence to their landlords to ask any favour they wanted—and had not those favours been more readily granted—since their connection with this society? He felt confident, that if the landed interest would only continue to contribute liberally to, and encourage by their presence, such associations as this, the very best results would arise from it. Nay, he could tell them that results were already arising from the operations of this society, which would not only be felt by the present occupiers of the soil, but by their successors, when they were no more; and it was his firm conviction, that the landlords of this county never contributed money which was more usefully laid out than that which they contributed to this society. He begged to give "The health of the successful candidates of the day" *(three times three)*.

Mr. VERNON, in a very short address, replied to the toast.

Mr. SKERRATT said that many toasts had been proposed and received with great enthusiasm. Indeed, it was an easy thing to propose toasts, when the subject of it was a successful candidate, or an officer of the society whose conduct entitled him to their thanks; but it was not such an easy thing to propose the health of gentlemen who, although not exactly losers, were at least not winners—gentlemen who were candidates for the premiums, but had not been successful. If successful, it would have been easy to congratulate them on their success; but while others had been rejoicing with those who rejoiced, it was his duty to weep with those who wept. He begged to propose "The health of the unsuccessful Candidates," and although they had not been winners this year, it was not for want of energy, but for lack of better stuff *(three times three)*.

Mr. JOHN REMER, of Hill Top, replied to the toast. He said it had been his lot to shew some stock that day; but he could assure the company that when he sent it he had not the ambition to think that he should come off a winner; he rather sent it in the expectation of being able to form a judgment as to how far he was behind his brother farmers. When he sent it he did not think he should be disgraced; he had not been disgraced, and therefore he was satisfied. With regard to the first prize for the best bull, there could be no difference of opinion on that point, and the judges could not possibly have come to any other conclusion than the one at which they had arrived. With regard to the second prize, he understood there had been some little difficulty in deciding who was the best—his own, or the one to which the prize was awarded. He was satisfied that he had shown good stock himself, but he was equally satisfied that there was better in the field than his own *(cheers)*.

The CHAIRMAN then said he had a considerable distance to go home, and as it was now getting late, he was compelled to leave the meeting. Before doing so, however, it was necessary that they should remember the town in which they were then celebrating their anniversary. Sincerely hoping that it might flourish more extensively than it had hitherto done, he begged to propose as the last toast he should have the pleasure of giving, "Success to the town and trade of Sandbach" *(cheers)*.

The toast having been shortly acknowledged, Mr. Tollemache left the chair, and his example was immediately followed by the majority of those present. A few, however, remained behind, to continue their festivity an hour longer.

AGRICULTURAL IMPLEMENTS.—A trial of a hand thrashing machine, imported from England by Mr. S. Ransome, took place on Monday. A great number of agriculturists were present. The machine was found to work exceedingly well in many respects. It thrashed the grain clear, and bruised it less than the horse machines now in use, and did not injure the straw; all that is required to render the machine more available to this colony, is a little attention, so as to work with horse power. This could be easily accomplished, and the invention would then be exceedingly well adapted to the circumstances of this colony.

People are constitutionally averse to labour in Van Dieman's Land, and would as soon be sentenced to the tread wheel, as be doomed to a day's work at a hand-thrashing machine. Mr. S. Ransome (son of the celebrated manufacturer of agricultural implements in Ipswich), also exhibited a variety of other articles, consisting of turnip cutters, ploughs, winnowing machines, chaff cutters, &c., of an ingenious and greatly improved construction. Another trial of the hand-thrashing machine will be made next week.—*Launceston* (Van Dieman's Land) *Advertiser*, April 28.

AGRICULTURE OF LANCASHIRE, CHESHIRE, &c.

TO THE EDITOR OF THE MANCHESTER GUARDIAN.

Sir,—Having seen a few strictures on Scotch farming in your paper lately, and Mr. Dixon's remarks in the *Courier* upon them, I will now, when the annual meeting of the members of the Manchester Agricultural Society is over, make a few remarks on the agriculture of the counties of Lancashire and Cheshire, with that of other parts of Britain, which you are at liberty to publish if you think proper.

I shall not, like my friend Dixon at the anniversary dinner last year, say that we Lancashire and Cheshire farmers are the best in the world: or, like Mr. Walker, say they are the worst. The latter gentleman, in taking his usual rides through the two counties, appears always to look at the dark side of the question. On the other hand, my friend Dixon, in performing the duties of his office, goes to view some of the best cultivated farms in the two counties; for instance, he goes to view Charles Smith's farm, of Ashton-on-Mersey, and he immediately concludes that all the farmers are Charles Smith's. I consider the tilt of these two gentlemen last year like that of the knights who fought on the emblazonment of a shield, both in the right and both in the wrong if applied to individuals.

I know it is considered by some men, that we farmers, and particularly we Lancashire and Cheshire farmers, have thicker craniums than our brethren of the loom and the steam engine. This I will not admit. However, I must allow that, as to a general knowledge of the world, and some of its affairs, we are behind some other classes. There is a cause for this, which I shall not enter upon here. We generally mind our own business, and seldom meddle with that of other people, if they will let us alone.

I have now seen more than fifty summers, and have had experience in the field as a labourer and as a farmer forty years. I have not, like my friend Dixon, read all the works on agriculture from Cæsar's Commentaries to the last number of the *Mark-lane Express*; but I have read a great number of works on the subject. When I first commenced farming, thirty years ago, I was quite an enthusiast, and read every work on the subject I could lay my hands on. Sinclair's Scottish Husbandry was my bible, Tull's Husbandry contained my creed, and Cobbett's my practice. At that time, I believed all I read upon agriculture; and, in consequence of this, had every year several experiments going on, so that in a few years I got the name of the *whimmey* farmer. I had a Scotch plough, which I so much idolised as to create jealousy in my wife. I was the first person in the parish of Bury who ploughed with two horses abreast without a driver, and the first who cultivated turnips in drills, and Swedish turnips and mangel wurzel any way. I say this to prove that I have not been bigoted to old ideas, old principles, and old practices in the art of cultivating the land, which is what we farmers are generally charged with, if we do not believe or practise what every theorist may recommend. After forty years' experience in the field, dating from the time I left school, and after thirty years' reading and practice on my own account, I have come to the conclusion—that there are few subjects on which there is so much nonsense written as upon that of agriculture. At the same time I admit, that I seldom read a work but I found some useful hint, which repaid me for the trouble of reading the book; I therefore do not condemn reading, but, on the contrary, highly recommend it. I only recommend caution, particularly to those who are young in the profession or in the practice of agriculture.

Having been an admirer of everything connected with land from a boy, I have frequently been in the habit of taking rural rambles, not only through this and the neighbouring counties, but in more distant parts of Britain, just to see what my brother sons of the plough were doing. This has enabled me to compare farm management 30 years ago and at present, both here, in the south, and in the north.

In the counties of Lancashire and Cheshire, I have observed a gradual and marked improvement in every branch of farming; and also, I am glad to say, in the intelligence of the farmers themselves. We have, I will allow, a great deal to do, and a great deal to learn before we arrive at anything like perfection, if perfection ever can be obtained; but we are travelling on towards it. We are not a speculative class of men, perhaps too little so; but, if we miss some of the important advantages arising from that spirit, we also miss those dreadful convulsions which are the result of a headlong and reckless spirit of speculation, excepting so far that we but too frequently get a taste of the bitter fruits arising from the conduct of speculating rascals. We generally pay 20s. in the pound, although it is very seldom we get to ride in our carriages; but this is because our sculls are thicker than those of other people. I believe our brethren of the loom and the spindle keep ahead of us in improvements in machinery, &c.; but we follow after, and never lose our distance.

Forty years ago drilling and hoeing were unknown amongst us (Lancashire and Cheshire farmers.) Potatoes were cultivated in lazy beds, and turnips broadcast. In the weight and in the quality of the former crops, we now beat every other part of Britain, not excepting the celebrated Lothians. Mr. Greg's largest crop there is little more than half a crop here. We also equal them with our turnip crops, in South Lancashire and Cheshire. Forty years ago we had no idea of cleaning our land, but by a summer fallow or hand weeding. Our best farmers now have little recourse to either. The horse and the hand-hoe now do the work among the drills, and the land is better prepared before planting or sowing. Forty years ago rotations were little understood, and never practised—except one corn crop after another—while little more than two or three times the seed was returned. We had then to cut our turnips, and other roots for cattle with a knife, by hand, and to wait sometimes several days of a wind before we could separate the corn from the chaff. At that time we had three or four horses in single file at the plough, with a man following the ploughman with a spade to rectify any mistake in the furrow. Every mistake of the ploughman was laid upon the shoulders of the driver. The former very frequently sent a clod at the head of the latter when the horses made any mistake in turning, which was almost impossible to be avoided with three or four horses in a "ruck." I have often had the pleasure of receiving these lumps of love about my head and shoulders, and have also had the honour of using this prerogative when I became installed in power between the plough stilts. These "vested rights" of the ploughmen are now superseded by what the south countryman calls "Gee'o" ploughs; and, where these are not used, we seldom now see more than two horses in a plough. Forty years ago draining was little practised; it is now rapidly extending on every hand. There is no comparison between our cattle, pigs, horses, and implements at this time and then. The Cheshire dairyman now makes one cwt. more cheese from a cow in a year than at that time. The Lancashire milk farmer gets from four to six quarts more milk per day on an average.

In comparing the Lancashire and Cheshire farmers' management with that of our brethren in the southern counties, I should say, most decidedly, that we are many steps in advance of them; and particularly in our crops, when both soil and climate are considered.

In the midland and south-western counties, I still see from three to six horses in a plough of the same construction as thirty years ago. I still see the clumsy tumbril cart and the lumbering waggon, used in carting dung to, and produce from, the fields: in both operations three horses and three men doing the same as two in Lancashire. I still see turnips and beans sown broad cast, or drilled at narrow intervals, so as to prevent the use of the horse hoe in effectually stirring the soil. I still see dung uncovered, or only half covered, in fields newly sown with turnips, wasting one half of its strength on the air instead of the soil, and very often the dung half carbonized. I still see large tracts under summer fallow, of what we should call good land. I still see land in some districts occupied in 'run rig.' I can still see crops on prime land smothered with poppies and charlock. The fields look very beautiful, certainly, with the yellow and scarlet flowers. I can still see large quantities of hay spoilt every year, for want of hands and proper attention in the making, and when, at the same time, there are plenty of hands unemployed in the same parish. I can still see barley and oats left unbound after the scythe, and carted like hay to the stack; very often the former reduced one half in value by sprouting, or one fourth of both shed upon the field. I can still, in some districts, see prime land cultivated in high-crowned ridges, with a strip of grass between each ridge. I can still see horses tethered by the foot upon these strips of grass, or upon clover or vetches, exposed to the mid-day sun, or the midnight storm, instead of being in a stable or shed, and the grass, clover, or vetches cut, and carried to them. I can still see ridges as crooked as the letter S in almost every county south of Cheshire, increasing in a degree the friction of the plough; and which is no doubt one cause of the number of horses still employed in ploughing. An old Lancashire farmer said, there was more land on a crooked ridge than a straight one; and once, when he had got a new ploughman, who in commencing to plough a field, which had been in potatoes, drew the first furrow of the first ridge out straight, he made the ploughman turn the furrow back and draw out a crooked one. I can still see the farm-servants in the south choaked with beef, mutton, bacon, cheese, beer and ale for ONE MONTH in the year (harvest); but who can seldom get to taste of any in the remaining eleven months. I can still see all these things done exactly as they were done thirty years ago; and yet, it is said, that we, Lancashire farmers, are a century behind our neighbours. I know there are farmers both in Lancashire and Cheshire who do every thing in the same way as they did thirty years ago, but they are comparatively few; while in a number of counties in the south, I can see little or nothing changed.

Now, Sir, for a few words to Mr. Greg on Lothian farming. I am not going to say our management is equal to theirs in every respect; but if their crops be no heavier than what he states them to be, we have a great number of farmers whose management is far superior to theirs, because our best farmers get weightier crops and have a worse soil and a worse climate. The Lothians lie upon the east coast, which, the whole length of Britain, is drier than the west coast. In the Lothians, you may travel miles after miles over as good a soil as you would wish to travel over, and not high above the level of the sea. In Lancashire it is not often that you can find ten acres of good land lying together. Very frequently, in the eastern parts of the county, there are three or four descriptions of soil in one field; or if it is not so, it is all bad. I quite agree with Mr. Greg, that the produce of England and Wales might be doubled, and he might have added Scotland; in some counties tripled, but not in Lancashire and Cheshire. He talks of the great "uniformity in the quality of the crops." This arises from the "uniformity in the quality" of the soil coupled with their management. Mr. Greg is a man of liberal principles, and I am exceedingly sorry that any one professing these principles should have expressed himself in the manner he has done in his letter on the Lothian farming. I must say, that I do not envy the feelings of any man who can assert that 13s. per week for a bailiff, 12s. for a ploughmen, 10s. for a labourer, and 4s. 6d. for a woman, are sufficient wages at this time; and this, while the farmer is paying 5*l.* per Scotch acre (4*l.* statute) rent, keeping a phaeton for his wife and daughter, dining out or receiving company three days a week, and saving 16,000*l.* in 19 years off 340 acres of land. (See farm No. 3 of his letter.) Indeed! has educating the peasantry of Scotland done this for them? Mr. Greg has drawn a correct picture of the Lothian farmers and their labourers. Twenty years ago, I found the farmers proud beyond the pride of Scotchmen generally. I found them tyrants to their dependants. I also found their wives and daughters riding in their "phaetons;" but I forgot to ask how often they dined out or received company. This was quite above my Lancashire notions of a farmer's life; and, I must say, I do not envy them of this happiness. I would not go through the labour and torment of dining out or receiving company three days a week for 1000*l.* a year; and if their education has given them these habits, it has been a sorry one.—Why, the "keen and pushing" men at Manchester never think of it, except those who intend to have their names posted in the 'Gazette.' But to return to my subject. Twenty years ago, I found their ploughmen quite as well informed as their masters. I also found them, the labourers, and families, living on water and oatmeal porridge twice, and often three times a day; seldom got to taste flesh meat, pudding, or wheaten bread, although the land was covered with the finest wheat, beef, and mutton, and which they had been the means of raising. I found the cottages which were attached to the farms, decent in their outward appearance; but comfort within was not studied at all. The Lancashire and Cheshire rural cottages in size, comfort, and convenience, are palaces in comparison. I was there in harvest, 1821 and 1824, and once since; but the last time had no opportunity of mixing with the rural population; but at the former times I found a cart come each day into the harvest field, at twelve o'clock, containing a bottle of beer and a loaf for each reaper, and which was delivered to each man upon his "rig," and from which he was not allowed to move while he took his repast, except at the displeasure of the master and his greeve; the former of whom rode from one end of the line of reapers to the other, looking more like a West Indian slave-driver than a British farmer. A South-of-England labourer does get a "blow-out" one month in twelve; but this is denied the Lothian labourer. I never was an advocate for equality; but I do wish to see the good things of this life more equally distributed than in the Lothians. A Lothian farmer never appears to care for any one but himself and his landlord. I say the "labourer is worthy of his hire." I also say that, if an able-bodied farm labourer cannot afford a sufficiency of plain substantial food for himself and family, and lay a little by for old age or sickness, either the rent of the land or the profits of the farmer are too high. In fixing a rent upon land, I have ever made it a rule to calculate upon every able-bodied labourer, who could do any kind of work upon a farm, receiving every week the value of two imperial measures of an average quality of wheat—that is, supposing the land under proper management for the situation it was in.

I will now show, from Mr. Greg's figures, that he has either *over-rated* the rents and profits of Lothian farming, or *under-rated* the produce. I will give him every advantage, in every case, by taking his highest amount of produce; that is, I will take ten tons of potatoes, thirty of turnips, six quarters of wheat, and ten of oats, per acre.

Farm No. 3 contains 340 acres; rent, 1,700*l.* Farmer took off, at the end of nineteen years, 19,000*l.*; his capital to commence with would be about 3,400*l.*, consequently his profits would be 15,600*l.*, besides keeping a phæton for his wife and daughters, and dining out or receiving company three days a week. These necessary wants of a Lothian farmer would take 500*l.* a year at least. This farm is situated near the city of Edinburgh; and I will suppose the whole of the fallow crops to be potatoes, which is giving it every advantage.

Dr.	£
To keep of 15 horses at 30*l.*	420
Seed for 68 acres of potatoes, at 30s	102
Do. 68 do. wheat, at 25s.	85
Do. 68 do. oats, at 20s.	68
Do. 68 do. clover, at 12s.	40
One greeve, 13s.; seven ploughmen, 12s.; five labourers, 10s.; ten women, 5s.; ten children, 3s.	591
Extra labour in planting potatoes, 10s. per acre	34
Do., manure to purchase, 5*l.* per acre	340
Do., labour in making 68 acres of clover hay, 10s.	34
Reaping 136 acres of corn, at 12s	82
Stacking and thatching stacks for 136 acres, at 2s.	14
Wear and tear on steam-engine, thrashing-machine, implements, &c., &c., five per cent. on capital	170
	1980
Rent	1700
Total	3680

Per contra.	£
By 68 acres of potatoes, at 20*l.* per acre	1360
" 68 do. wheat, 6 qrs. per acre, at 60s. per qr.	1224
" 68 do. oats, 10 qrs. do., at 20s. per qr.	680
" 68 do. clover hay, at 7*l.* per acre	476
" 68 do. pasture, at 5*l.* per acre	340
	4080

This leaves a balance of only 400*l.* for interest, profits, &c.; and out of this he has to save 15,000*l.* in ninteen years, support a phæton, and dine out or receive company three days a week. I will now put the account in the form he would put it, but which will not apply to a farm where the fallow crop is wholly potatoes, and sold off the farm. In other cases, the 47 per cent. for expences will be about a proper proportion.

	£		£
Value of produce	4080	Rent	1700
		Expenses 47 per ct.	1925
		Balance	455
			4080

No. 7.—500 Acres Clay Land.

Acres.	Produce.	£
50	beans, at 12*l.* per acre	600
50	fallow	000
100	wheat, at 18*l.* per acre	1800
100	oats, at 10*l.* do	1000
100	clover, at 7*l.* do	700
100	pasture, at 5*l.* do.	500
500		4600

Per Contra.	£
By rent	1750
" expenses, at 47 per cent.	2162
" balance for interest, profits, phæton, and dinners	688
	4600

Capital required, 5,000*l.*

No. 10.—*Purchase and cost*, 75,000*l*.—600 acres.

I will consider this farm fit for any crop, and will put the highest amount of produce quoted by Mr. Greg, same as in the other cases.

Acres.	Produce.	£
25	potatoes, at 20*l*.	500
25	turnips, at 10*l*.	250
50	fallow	000
75	wheat, at 18*l*. per acre	1350
25	barley, at 15*l*. do.	375
100	beans, at 12*l*. do.	1200
100	oats, at 12*l*. do.	1200
100	clover, at 7*l*. do.	700
100	pasture, at 5*l*. do.	500
600		6075

Per contra.	£
By rent, 4 per cent. on cost	3000
" expenses, 47 per cent	2855
" balance for profit, interest, phæton, and dinners.	220
	6075

Mr. Greg says, 33 per cent. of the produce is generally about the rent of the farm in the Lothians, and which I should consider a fair proportion. Therefore, take No. 3, rent 1700*l*. *plus* 3—5100*l*. value of produce; 20 per cent. of this 1020*l*. Now this sum will not support dinners, phæton, and save 15,000*l*. in nineteen years. But the value of the produce will not be 5,100*l*., according to his own statement.

To conclude this long article, I must say a word on leases. The Scotch farmers have almost universally leases of nineteen years. They have no poor-rates to pay, or church-rates. This is as it should be, notwithstanding what my friend Dixon may say to the contrary. The Scotch leases are made upon rational principles. The tenants *may and can fulfil* the conditions. When there are any here, this is not the case: they are not made with the intention of their being fulfilled. Tenants *ought to be independent* of their landlord, if they cultivate their farms in a proper manner, and pay their rents duly, but not one day longer. Here, if the landowners and the parson think proper to pull down and rebuild the parish church, or only a part of it, the tenants have to pay the cost. This is not the case in Scotland. If trade goes bad here, as it has been for four years back, the farmers have nearly double rates to pay. This is not the case in Scotland. It is said these things are considered in our rents. Common rates are; but these extra pulls upon our purses are not.

I am, sir, yours, very respectfully,
Winwick, Oct. 4th. W. ROTHWELL.

COLLUMPTON FARMERS' CLUB.

The first Ploughing Match of this Club took place on Monday last, the 24th of October in two fields at Wintran, on the Exeter road, belonging to Mr. John Hole, of Green-end, Plymtree. The abundance of rain which fell on the previous Saturday and Sunday made the ground in capital condition for ploughing, and it was generally considered to be of a very superior description. The morning was exceedingly fine, and it was evident great interest was excited from the vast concourse of persons on the ground.

The dinner took place at Bowerman's White Hart Hotel, and about 70 gentlemen partook of it; a most delightful meeting it was, the utmost harmony prevailed, and several new members were added.

The Rev. JOHN HUYSHE was in the chair, and gave universal satisfaction by his judicious remarks and great urbanity. He said that the tariff had thrown a damper on the agricultural interest, but he begged them not to despair, but to use their utmost efforts, and he had no doubt that eventually we should be able to beat the foreigner out of the market.

That staunch friend to the agricultural interest, and most excellent gentleman, E. S. Drewe, Esq., of the Grange, was present, giving his countenance and firm support to this infant society, promising to be frequently with them at their monthly meetings to encourage and cheer them in their laudable objects. In fact Mr. Drewe is indefatigable in every thing that tends to better the condition of his fellow creatures.

The respected Honorary Secretary, Fred. Leigh, Esq., made a most excellent and effective speech in the course of the evening; and Mr. Joseph Foster, chemist, delivered a useful and eloquent one on Chemistry and Geology. Many other good speeches were made, and the whole went off in admirable style.

It appears that the remarks of the Rev. Dr. Coleridge at the Tiverton meeting have been duly appreciated by the clergy, as there was a strong muster of that body. We observed the Rev. Mr. Roberts, Rector of Kentisbeare, and brother-in-law of the Earl of Egremont; Rev. Mr. Walkey, Rev. John Sydenham, and many others; Henry Matthews, Esq., of Bradnicnh; R. Mortimer, Esq, Mr. Wm. Hole, Mr. John Hole,—Justice, Esq., and a great many of the gentlemen and yeomen of the neighbourhood.

The first prize was awarded to John Houghten, ploughman to Mr. John Hole, Plymtree. The first boy's prize was awarded to a son of Mr. F. Martin, of Channanshayes, Collumpton, a mere child.

The Rev. JOHN HUYSHE, who delivered the prize to the lad, observed it was indeed a high honour for one so young to obtain a prize, and happy he was to know that he bore so excellent a character, and he trusted as he advanced towards manhood he would still further distinguish himself in every good word and work.

The bells rang merrily during the day, and a number of glee singers added to the conviviality of the dinner table.

A valuable work was sent to the Members of the Club as a present from W. Shaw, Esq., Managing Director of the Farmer's Insurance Company, who regretted that he could not be with them as he intended. His health was proposed by F. Leigh, Esq., and responded to in the most cordial and handsome manner. E. S. Drewe, Esq., as a Member of the Royal Agricultural Society, returned thanks on behalf of Mr. Shaw, who intends to embrace the first opportunity of paying his personal respects to the Members of the Club.—*Western Times.*

A GOOD COW.—The following song descriptive of the points of a celebrated Durham Cow was chaunted amidst great applause at the Darlington Agricultural Society's Meeting:—

She's long in her face, she's fine in her horn,
She'll quickly get fat without oil-cake, or corn.
Hurrah! hurrah for this beautiful cow!
She's clear in her jaws and full in her chine,
She's heavy in flank and wide in her loin,
She's broad in her ribs and long in her rump,
Has a straight and flat back with never a hump.
Hurrah! hurrah for this beautiful cow!
She's wide in her hips and calm in her eyes,
She's fine in her shoulders and thin in her thighs.
Hurrah! hurrah for this beautiful cow!
She's light in her neck and small in her tail,
She's wide in her breast and good at the pail,
She's fine in her bone and silky of skin,
She's a grazier's without and a butcher's within.
Hurrah! hurrah for this beautiful cow!

—*Gateshead Observer.*

ON THE COMPARATIVE VALUE OF MANGEL WURZEL AND SWEDE TURNIPS.

At the annual meeting of the Cuckfield and Weald of Sussex Agricultural Association on the 7th Oct., this subject was brought very prominently forward by the several speakers.

Mr. Bigg, of Slaugham, remarked, that Lord Spencer, they all knew, was the owner of the finest descriptions of stock, and at the great national exhibition his Lordship's stock carried away the prizes. He had tried experiments very extensively with the mangel, feeding some stock with that root and with Swedes in alternate months; and after the greatest attention in this way for six months, he gave the preference to mangel. He found that during the months when they were fed upon mangel the beasts increased 4 or 5lb. more than when fed upon Swedes. Now he (Mr. Bigg) knew that, with anything like ordinary management, mangel wurzel might be grown to great perfection. The land which grew the roots that he had shown to-day had been in his possession four or five years. It was originally very bad land. and had been further deteriorated by over-cropping, He had given it two slight dressings; and had it not been for the attacks of insects, he could have shewn some roots considerably heavier than those shown. With good farming, he thought that mangel would produce from forty to forty-five tons to the acre,—a larger quantity than, he believed, any other root would yield. He might just observe that the orange globe yielded more saccharine matter than any other description of beet.

The Chairman (Lieut.-Colonel Elwood) said, Mr. Bigg had anticipated him in a remark which he had intended to make with regard to the mangel wurzel. He had told them that Earl Spencer had tried it, and found that the advantage was decidedly on the side of mangel wurzel, when compared with the Swedish turnip, for the feeding of cattle. If it were ever of consequence to know how best to turn lean cattle into fat, it was certainly of much greater consequence now than ever; because they had now to compete not only with Old England, but also with neighbouring countries; and he was obliged to Mr. Bigg for the specimens which he had sent to-day of the mangel wurzel, which showed to what perfection that vegetable, which had been found so efficient in fattening, could be brought in their own neighbourhood. Earl Spencer in one of his experiments, selected two steers nearly of equal age and equal weight; No. 1 he fed upon Swedish turnips, No. 2 upon mangel wurzel, and the one fed on the mangel was decidedly preferable. He then changed the food, giving No. 1 mangel, and No. 2 Swedes, and found that the animal going from mangel to Swedes decreased, as they all knew was the case when an animal went from better to inferior food. The same experiment tried on cows was equally decisive in favour of the use of mangel. He then gave all these particulars to the parent Society—the Royal Agricultural Society of England; and in consequence of what he communicated, Mr. Miles, M.P. wrote to the President of the Royal Agricultural Society, P. Pusey, Esq., M.P., as follows:—

"Notwithstanding the favourable result of Lord Spencer's experiment with mangel wurzel, the consideration will naturally suggest itself to the mind of the farmer, previously to his adopting the cultivation of this root—whether, although the mangel wurzel may bring on his cattle faster and better than the Swede turnip, it is not more difficult of culture, more tender in its habits, and less productive, bulk per acre, than the Swedish turnip?" With regard to that, he said in another part of the report, after giving a table of the different proportions of the saccharine matter of turnips, mangel wurzel, &c.—"I have grown the common red sort for six, the sugar beet for four, and the orange globe for three years. These kinds have regularly come into course with Swedes upon light grounds; and the produce has always been equal, in most cases far heavier. The Swede turnip has enemies innumerable; I have never observed the mangel wurzel attacked either by fly, slug, or wireworm. Equally a cleansing crop with the Swede, it stores better and lasts good for a longer period. In the summer of this year I was using sugar beet with stall-fed cattle, which cut perfectly good and crisp in August." He proceeded to say, "I have formed a very high opinion of the orange globe. Though not so large a produce generally as the two other sorts, it appears always to throw at least two-thirds of its weight above ground. In feeding store cattle, I should commence with Swede turnip, proceed with the orange globe, then with the mangel wurzel, and finish off with the sugar beet; thus not only frequently varying the food, but using them in the order corresponding exactly with the nutritious matter contained in each description of plant. These are the details of the system I adopt as regards this root, and I shall be glad if I should prevail upon those who have not yet tried the culture of it to grow a small quantity, assured as I am that, for certainty of crop and feeding properties, the mangel wurzel will not deceive expectation."

Mr. Blaker congratulated Mr. Bigg on the handsome roots of mangel wurzel which he had brought to the Show. He had himself had some experience in growing mangel wurzel and Swede turnips; and he gave the preference to the Swedes as long as they remained good, but when they got into the months of April and May, mangel was decidedly superior, Swedes losing their virtue in the spring. Notwithstanding the opinion of Earl Spencer with regard to the fattening qualities of mangel, he preferred Swedes. He would also just mention that he thought it a good plan, in sowing mangel, to mix a little Swede with it. He did so last year, when he lost his mangel, but had a good crop of Swedes.

The Chairman was exceedingly obliged to Mr. Blaker for his information. That was precisely the sort of thing they wanted at these meetings.

Mr. E. S. Bigg—Perhaps Mr. Blaker will tell us whether he grew the common mangel, the orange globe, or the sugar beet? The sugar beet produces the greatest quantity of saccharine matter, which is the fattening principle; the orange globe the next; and the field beet the least of all.

Mr. Blaker replied, that he had tried the field beet, which he believed was the w orstsort. He had tried to get a crop of orange globe; but, as he said just now, his seed failed.

Mr. Bigg—In the neihgbourhood of London they grow the common field beet in large quantities for use in the dairies; and theyfind it a great producer of milk.

Mr. Blaker—Just so; and I think that is the principal use ofit.

Mr. Bigg—That is the common field beet. The other sorts are excellent for fattening; at least, that is the opinion of gentlemen who have studied the subject and made it a matter of chemical analysis,

ANNUAL DINNER OF THE MONMOUTH FARMER'S CLUB.

At the conclusion of the ploughing match and the other business, about seventy persons sat down to an excellent dinner at the Beaufort Arms, served in Mr. Whiting's best style. Thomas Gratrex, Esq., ably performed the duties of president, and the vice chair was efficiently filled by Mr. Purchas, the hon. secretary of the club. On the removal of the cloth, after the Chairman had proposed the usual loyal toasts,

Mr. Purchas gave "Success to the Monmouth Farmer's Club," which was drunk with three times three, and great cheering; and then read the list of prizes and gratuities awarded by the judges, at the conclusion of which he proposed "the Successful Candidates in Ploughing."

The successful candidates were then called into the room, and severally received the prizes awarded from the hands of the Chairman, who complimented each on his success, and expressed a hope that it would stimulate them to further exertion. Their neat appearance and orderly conduct excited universal admiration, and they expressed themselves much gratified by the prizes given to them.

The Chairman then gave the other successful candidates, which was drunk with great applause.

The Chairman said he had to propose a toast which they would drink in a bumper—"The Chairman and Committee of the Farmer's Club for the past year." The Club was much indebted to them for their exertions, and he hoped the toast would be received in the manner it deserved. (Three times three, and cheering which lasted for a considerable time.)

Mr. R. Jones acknowledged the toast, and on the part of those gentlemen expressed himself obliged for the manner in which it had been received, although he did not think they had deserved the compliment, and he had no doubt the duties would be better performed by the present committee.

Mr. Purchas stated that it had been suggested that the Club should hold their monthly meetings at different houses, and the committee had recommended that the meetings should be held in rotation at the different inns.

It was then agreed that the meetings for the ensuing year should be held as follows:—Nov. 19, Dec. 17, Jan. 14, Feb. 11, March 18, April 15, May 13, June 17, Sept. 9, Sept. 30, Oct. 5.

The Chairman called for a bumper, and said he was sure they would all agree with him that the toast he was about to propose deserved it—it was the health of their worthy and excellent Secretary. (*Loud cheers.*) That cheering spoke volumes, and he need say little more. Mr. Purchas was the founder of the Club, and he hoped he would live long to see his labours flourish. (*Loud cheers.*) Drank with musical honours.

Mr. Purchas said he felt grateful for the manner in which his name had been received, and he could only say that he would do all in his power, and at all times, to further the interests of the Club. (*Cheers.*)

Mr. Purchas proposed "the Labourers of the United Kingdom." Without the assistance of good labourers the farmers could not go on, and certainly the agricultural labourers were a bright example to the other classes. We have the proof of this in the two old servants of Mr. Brown and Mr. Hallen the Club had rewarded this day.

The Chairman gave "the Judges of the Ploughing Match," some of whom had come a long distance to perform the service, and all of whom had given universal satisfaction in their decisions. Drank with much applause.

Mr. Garsed shortly replied to the toast, and concluded by proposing the health of Thos. Gratrex, Esq., who had so ably presided to-day. Three times three, and loud cheers, and musical honours.

The Chairman said, that on taking the chair, he certainly did feel that a gentleman of greater influence in the county ought to have presided, and he was afraid they had paid him a greater compliment than he deserved; he felt very grateful for the handsome manner in which his health had been proposed and received by them, and it ought to stimulate him to further exertions in the cause when he could be of service.

Mr. Purchas said he would give them a toast, which should have been given earlier in the evening —"the landed proprietors." (*Cheers.*) They would not have been there that day if it had not been for the landed proprietors. The Duke of Beaufort gave them 10*l*. (*Cheers.*) Major Marriott was the first to subscribe to the separate fund, and to that gentleman they were indebted for an annual subscription of 5*l*. To the Earl of Dunraven, Mr. Rolls, Mr. Crawfurd, the Messrs. Bailey, M.P., Mr. Blakemore, M.P., Mr. O. Morgan, M.P., Mr. Hughes, Treaddam, Mrs. Rooke, and Mr. Baskerville, M.P., they also must feel grateful for large subscriptions, and he would therefore give the donors generally. Three times three, and great cheering.

The Chairman gave "Speed the Plough," which was followed by "Live and let live."

Mr. Purchas gave "The Royal Agricultural Society of England," and he would couple it with the health of his friend Mr. Shaw, who was the originator of that the first agricultural society in the world.

The Chairman said, as there were many farmers present, he was sure they would respond to the toast he was about to give, particularly as the gentleman was not unconnected with farming. He was a kind, liberal landlord, and he had no doubt many of the gentlemen present often saw him riding over their grounds. He would give them the health of Mr. J. George. Drank with musical honours.

Mr. J. G. George begged they would accept his best thanks for the flattering manner in which his health had been proposed and drank. He could assure them that he felt it not only a pleasure, but he considered it a duty incumbent on him, to meet the members of the farmer's club. The great object of the ploughing matches was to get good ploughmen, and he considered they had achieved wonders in that respect, for they had nearly, if not quite, doubled the number of competitors this year more than last. It was said that we ought to endeavour to make two blades of grass grow where one grew before; but we *must* do so if we intended at all to compete with neighbouring counties; these were the times that "go-ahead" was the principle adopted, and instead of contending for class interests, we must endeavour to increase our means of production. In reading a work on agriculture lately, he found it there laid down that there was no poor soil in Monmouthshire; now many present would say that they knew better; but the author clearly meant to say that there was no soil naturally poor; that there was a quantity of land poor from improper cultivation, they were well aware, and it was the object of the farmer's club to point out the means of improvement. He found it stated in the same work that the means of improvement were embanking of water meadows, drainage, and knowledge, and he would place knowledge first, and they could not have a better means of obtaining that knowledge than through the farmer's club, which supplied them with an excellent agricultural library. For himself, he might say that he farmed by deputy, and he knew little practically of agriculture; but he tried to induce his tenants to improve their system of farming. It gave him great pleasure the other day at Bristol to meet a great number of the tenant farmers of this district at the anniversary of the Royal Agricultural Society, as they had the opportunity of seeing stock of the finest description, and a capital assortment of agricultural implements. They had present at that meeting a royal prince of England, some of the greatest landed proprietors of the country, and men of distinction from foreign countries—all engaged in the endeavour to promote the knowledge of agriculture, and he trusted that feeling would prevail not only in our own but other countries. He hoped the members of the club would make use of the library, for he had derived much information from a perusal of several of the books. He again thanked them cordially for the manner in which they had drunk his health, and he hoped to be present at many of the anniversaries of the Monmouth Farmer's Club. (*Cheers.*)

The Chairman said it had been observed that much is to be done by draining. It behoved us, now we have to compete with foreign stock and corn, not to rest satisfied with half doing; but it was necessary that all our best energies should be brought into action. He did not think so much was to be feared at the importation of foreign cattle; but if meat became a little cheaper, he hoped the poor would have the benefit thereof. Before he sat down he would give "Success to the Town and Trade of Monmouth," which could boast of having men of great integrity, as well as of business habits, resident therein; and to show their anxiety for the welfare of the agricultural interest, they numbered no less than 46 subscribers to the club in the town.

Mr. Evans briefly returned thanks.

Mr. Purchas proposed the Chairman, Vice-Chairman, and Committee for the ensuing year:—Mr. Pride, Chairman, Mr. Yarworth, Vice-chairman, and Messrs. J. G. George, Garsed, H. Williams, Parsons, Cullern, Yeomans, Amos Jones, Edmund Jones, and Sherriff.

Mr. Garsed acknowledged the toast.

Mr. George also spoke to the toast, and pledged himself to attend the meeting regularly. Nothing but the most urgent business should keep him away. They had heard it stated in the judges' award that there was a ploughman only twelve years of age, and it was something for Monmouth to be proud of, for it was a rare sight to see the plough managed as that lad managed his. A few years ago, if we had talked of a ploughman only twelve years of age ploughing with a pair of horses, we should have been called madmen; but they had seen such a thing to-day. He should propose as a toast the health of the youngest ploughman of the day, and he hoped when he grew up he might have sons like his father. Mr. George concluded by proposing the health of William Williams, which was responded to by the company with great feeling.

Mr. James Williams (Trelleck) returned thanks on behalf of his son.

The Chairman said he would give them the health of a gentleman who was not present on account of ill health. He alluded to the Mayor (J. Probyn, Esq.), who not only as a magistrate fulfilled his duties in a most impartial manner, but never forgot his duties as a neighbour and friend. Drank with great applause.

Mr. Purchas said, the Chairman had put him in mind of a duty—to propose the health of a gentleman, who was a subscriber to the club, and who took the chair at the last anniversary—John Rolls, Esq., the High Sheriff; and he was assured that nothing but a family affliction had prevented his attendance that day. Drank with musical honours and loud cheers.

Mr. Pride proposed "Mr. and Mrs. Whiting."

Mr. Whiting said he felt much obliged for the manner in which they had drunk his health, coupled with that of his wife, and he could assure them that he would do all in his power to merit acontinuance of their esteem.

The Chairman proposed "the Members of the Legal Profession present," to which Mr. J. G. George, Mr. W. Wanklyn, and Mr. T. Oakley replied.

Mr. Gratrex then vacated the chair, and with several gentlemen retired; but the company, although reduced in numbers, still did not like the pain of separation, and kept it up for some time after.

All the ploughmen and boys were regaled at the Angel Inn, where an excellent dinner was provided by Mr. J. Williams, and was done ample justice to by all present.

TILE DRAINING.

From an article entitled "Statistics of Tile Draining," published in the *Ayr Observer*, we select the following facts and inferences, which, for brevity's sake, are thrown into our own language. So far back as 1793, Colonel Fullarton paid much attention to draining, and in his "General View of the Agriculture of Ayrshire" describes accurately the methods then in use. Stone drains, 50 years ago, cost from 3*l.* to 5*l.* per acre, and in tenacious soils were liable to so many accidents, that the practice, after a time, fell into general desuetude. But a second and simpler method is described. Thick sods were cut and laid aside, and then trenches scooped deep enough to resist the effects of circumambient furrowing. A narrower spade was then used, and smaller trenches formed at the bottom, with shoulders or epaulments of a few inches on each side. After removing the earth, the top sods were reversed, and by resting on the shoulders just mentioned, left a limited space empty for water tables subterranean. The drains were then filled level with the surface, and the patriotic Colonel honestly confesses that, "neat as this method may be for dressing pleasure-grounds and parks, it is found inadequate for the great purposes of drainage on an extensive scale." But even then, unknown to the author quoted, tile tubes or barrels of a certain bore had been tried on the estate of Auchencruive. Some of these tubes, which were made at the Drongan pottery 70 years ago, were dug up in the pleasure-grounds last season, and exhibited in the Ayr market, where they attracted much attention. On the estate of Cavens, in our own neighbourhood, several fields were furrow-drained about the same time, sewered, and closed upon a different principle. A slate was placed at the bottom of the furrow, abutting two bricks on edge, about four inches apart, and parallel to each other; on the top another slate was placed, as a roofing to the slender superstructure below, and the operation finished by replacing the earth previously taken but; and, simple as this process may appear, the object in view was so well attained, that the Cavens drains are described in the article before us as running passing well at the present day. So wedded, however, are the great bulk of mankind to use and wont, and suspicious of "new-come changes," that scarcely a single individual followed the example of the then proprietor of most extensive estates in Ayrshire and Galloway.

But a new era as regards draining dawned in Ayrshire about 15 years ago, under the high auspices of the Duke of Portland. Still, even then, with the schoolmaster more abundantly abroad, increased capital, enterprise, education, the mass of ruralists objected to the durability of tiles, and altogether looked so coldly on, that, over the Duke's vast estates, not more than two, out of a numerous array of farmers, embraced willingly the improvement recommended. Still his Grace, in putting his hand emphatically to the plough, is not of those who pause to look back; and, such are the virtues that wait on perseverance in a good cause, that there are at present in the county of Ayr alone, fifty-four tile works in active operation. The names, proprietary, and locality of these, are all given in the article we quote from, in connection with the following interesting particulars:—

"The above works will produce on an average thirty millions of tiles yearly, a quantity capable of draining not less than 12,396 imperial acres, allowing a distance of eighteen feet between the drains. The number of acres in Ayrshire is 793,600, and suppose one-fourth to be incapable of amelioration, there will still remain 595,200 of improveable land. At the present year's rate of tile-making —taking it for granted that the whole have been used, and deducting 150 millions as the manufacture of previous years—it would require nearly forty-three years to complete the drainage of the county. The selling price of thirty millions of tiles, at 30s. per thousand, would be 45,000*l*. The quantity of coal consumed will be about 15,000 tons; and the number of men and boys employed in making them not less than 1,200. Thirty millions of tiles, one foot in length, will lay 1,621,621 falls of drains, 18½ feet to the fall, or nearly 6,000 miles. Supposing the average cost of cutting, laying, and filling the drains to be 4d. per fall, the total would amount to 27,027*l*.; and, calculating a labourer's wages at 10s. per week, for sixteen weeks in the year, the usual period of draining in this country, it follows that employment is given to 3,378 men—a matter of no small moment, especially at a season when other out-door labour is generally scarce. Granting that 150,000,000 of tiles have been laid prior to this date, 61,980 imperial acres will necessarily have been drained. Take the produce, before subjected to this process, at six bolls, and now at ten per acre—a medium average—the increase, over former years, will be 247,920 bolls, or 123,960 quarters. Carrying the calculation a little farther: suppose that equal enterprise is displayed during the next ten years—and there is every probability that it will far exceed it—the stimulus given to the productive capabilities of the soil will be still more strikingly apparent. Ten years draining at 12,396 acres early, will give a total of 123,960, or an *increase*, at the previous average, of 247,920 qrs. of grain. Thus shewing an augmentation in the means of existence of 60 per cent."—*Dumfries Courier.*

APPLEBY AND KIRKBY STEPHEN AGRICULTURAL SOCIETY'S EXHIBITION.

At the second exhibition of this Society, at Appleby, the Judges were—Mr. Benn, of Lowther; Mr. Harrison, of Low Field; Mr. Abbotson, of Hornby Hall; Mr. Young, of Longmarton; Mr. Dixon, of Winderwath; and Mr. Bowness, of Middleton. The following is a copy of the premiums awarded:—

Class I.—Farms.

1. To the tenant and resident occupier of any farm, who shall have the same in the neatest and best condition, the farm being not less in quantity than 150 acres, 8*l*.; to Mr. Thomas Nicholson, of Kirkbythore.

2. To the tenant and resident occupier of any farm, who shall have the same in the neatest and best condition, the farm being not less in quantity than 30 acres, 4*l*.; to Mr. Joseph Robinson, of Bongate.

3. To the tenant and resident occupier of a grazing or dairy farm, who shall have the same in the neatest and best condition; the farm being not less in quantity than 70 acres, 6*l*.—No competition.

4. To the tenant and resident occupier of a grazing or dairy farm, who shall have the same in the neatest and best condition; the farm being not less in quantity than 30 acres, 3*l*.—No competition.

5. To the tenant and resident occupier of any farm who shall produce the best crop of turnips, 3*l*.; to William Allan, Burthwaite.

6. To the tenant and resident occupier of any farm who shall drain the greatest quantity of land, 2*l*.; to Richard Pearson, of Harbour Flat,

7. To the tenant and resident occupier of any farm, who shall produce to the inspectors the best general stock, 4*l*.; to Thomas Nicholson, Kirkby-Thore.

8. To the person who shall produce the best crop of turnips raised from bone manure, 1*l*. This premium was given by Mr. Mitchel, of Bolton Mill, bone dust manufactory, to Robert Addison, Crossridge Hall.

Class. II.—Rewards.

9. To the farmer's man-servant who has lived the greatest number of years in one situation, 2*l*.; to James Atkinson, servant 25 years with Mr. James Lamb, Sandford.

10. To the farmer's woman-servant who has lived the greatest number of years in one situation, 2*l*.; to Elizabeth Robinson, 27 years with Mr. Joseph Thomson, Langton.

11. To the labourer in husbandry who has brought up the greatest number of children, 3*l*.; to James Parsley, of Esplam Moor, ten children living and two dead, the eldest 19 years old.

Class III.—Cattle.

12. Best short-horned bull, 10*l*.; to Mr. Roland Watson, Crackanthorpe.

13. Second best ditto, 5*l*.; awarded to Mr. John Crosby, Kirkby-Thore.

14. Best short-horned bull under two years old, 5*l.*; to Mr. James Close, Smardale Hall.

15. Second best bull under two years old, 2*l.* 10s.; to Mr. J. Snowden, Winton.

16. Best short-horned cow, in calf or in milk, 4*l.*; to Mr. William Thompson, of Kirkby Stephen.

17. Second best short-horned cow, in calf or in milk 2*l.*; to Mr. T. Atkinson, of Appleby.

18. Best short-horned heifer, in calf or in milk, 4*l.*; to Mr. William Thompson, of Kirkby Stephen.

19. Second best short-horned heifer, in calf or milk, 2*l.*; to Mr. Tinkler, of Eden Grove.

20. Best short-horned cow or heifer, in calf or in milk, the property of any tenant of a farm under one hundred acres, 4*l.*; to Mr. Henry Atkinson, of Winton.

21. Second best short-horned cow or heifer, in calf or in milk, the property of any tenant of a farm under one hundred acres, 2*l.*; to Mr. Langhorn, of Ravenstonedale.

22. Best two-year-old short-horned heifer, 3*l.*; to Mr. Tinkler.

23. Best two-year-old short-horned heifer, the property of any tenant of a farm under one hundred acres, 3*l.*; to Mr. Jonathan Rigg, of Crosby Ravensworth.

24. Best one-year-old heifer of any breed, 2*l.*; to Mr. Thomas Nicholson, of Kirkbythore.

25. Best one-year-old heifer of any breed, the property of any tenant of a farm under one hundred acres, 2*l.*; to Mr. Jonathan Rigg, Crosby Ravensworth.

26. Best cow of any breed for dairy purposes, 4*l.*; to Mr. Thomas Atkinson, of Appleby.

27. Best fat cow or heifer, of any breed, 2*l.* to Mr. Thompson, of Kirkby Stephen.

Class IV.—Horses.

28. Best brood mare, for the general purposes of agriculture, 3*l.*; to Mr. Thomas Blencarn, of Keesely.

29. Best coaching brood mare, 3*l.*; to Mr. Anthony Harrison, Brough.

30. Best two-years-old colt for saddle or harness, 2*l.*; to Mr. George Hutchinson, Woodside.

31. Best two-years-old filly for ditto, 2*l.*; to Mr. Markham, Morland.

32. Best one-year-old colt or filly for ditto, 1*l.* 10s.; to Mr. Samuel Crosby, Powis House.

33. Best two-year-old colt for husbandry purposes, 2*l.*; to Mr. Samuel Crosby. Only half of the premium awarded.

34. Best two-year-old filly for ditto, 2*l.*; to Mr. David Patterson, Copeland, Beck.

35. Best one-year-old colt or filly for ditto, 1*l.* 10s; to Mr. John Atkinson, Whinfell. Only half of the premium awarded.

Class V.—Sheep.

36. Best Leicester ram, 2*l.*; to Mr. Joseph Wilson Crackanthorpe Hall.

37. Second best ditto, 1*l.* 10s.; to Mr. John Harrison, Moorhouse.

38. Best Leicester shearling ram, 2*l.*; to Mr. Tinkler.

39. Second best ditto, 1*l.*; to Mr. James Nicholson, Blencarn.

40. Best Leicester tup lamb, 1*l.* 10s.; to Mr John Harrison, Moor House.

41. Best pen of three Leicester ewes, 2*l.*; to Mr. Thomas Nicholson, Kirkbythore.

42. Best pen of three Leicester gimmer shearlings, 2*l.*; to Mr. Tinkler.

43. Best pen of three Leicester gimmer lambs, 1*l* 10s.; to Mr. John Harrison, Moor House.

44. Best black faced ram, 3*l.*; to Mr. Richard Pearson, Harbour Flat.

45. Second best ditto, 1*l.* 10s.; to Mr. Isaac Handley, Ravenstonedale.

46. Best black faced shearling ram, 2*l.*; to Mr. Jonathan Shepherd, Murton.

47. Second best ditto, 1*l.*; to Mr. Thomas Preston, Ravenstonedale.

48. Best black faced shearling ram, in the hands of the breeder, 2*l.*; to Mr. George Ellwood, Keesely.

49. Best pen of ten black faced ewes, 2*l.*; to Mr. Richard Pearson, Harbour Flat.

50. Best pen of five black faced gimmer shearlings, 2*l.*; to Mr Richard Pearson, Harbour Flat.

51. Best pen of five black faced gimmer lambs, 1*l.*; to Mr. Richard Pearson, Harbour Flat.

52. Best Herdwick ram 2*l.*; to Mr. Matthew Thomson, Kirkby Stephen.

53. Best Herdwick shearling ram, 1*l.* 10s.; to Mr. Matthew Thompson, Kirkby Stephen.

54. Best pen of ten Herdwick ewes, 1*l.*; to Mr. Matthew Thompson, Kirkby Stephen.

55. Best pen of five Herdwick gimmer shearlings, 1*l.*; to Mr. Matthew Thompson, Kirkby Stephen.

Class. VI.—Pigs.

56. Best boar of the most approved breed, 3*l.*; to Mr. Heelis, Longmarton Hall.

57. Second best ditto, 1*l.*—No competition.

58. Best breeding sow of the most approved breed, 3*l.*; to Mr. Crosby, Kirkbythore.

59. Second best ditto, 1*l.*; to Mr. Wilson, Crackanthorpe Hall.

60. Cottager's, labourer's, or artizan's best fat pig, under eighteen months old, 1*l.*; to Mr. George Dover, Castle Gate.

Class VII.—Husbandry Implements, Seeds, and Roots.

	s.	d.
Nicholas Pingney, King's Meaburn, a plough	7	6
Do. do. a horse hoe.	7	6
Mr. Wilson, Crackanthorpe Hall, a hay rake.	5	0
Mr. Crosby, Swede turnips by guano manure.	5	0
Mr. Jonathan Shepherd, Murton, green-topped yellow turnips......................	5	0
Mr. Thomas Nicholson, red Norfolk turnips.	5	6
Mr. John Sarginson, Appleby, drum-headed cabbage	2	6
Mr. Thomas Nicholson, do. do.....	2	6
The two last were both deserving.		
Mr. Robert Parker, onions................	2	6
Mr. Thomas Nicholson, mangel wurzel......	2	6
Mr. George Hanson, Highland, early potatoes	2	6
Mr. William Winskill, Chidham wheat......	10	
Mr. Robert Hutton, Soulby, field carrot.....	2	
Do. three stalks of rhubarb	2	6

The Dinner

Took place at Mrs. Herd's, the King's Head Inn. About one hundred gentlemen sat down to dinner, and were ably presided over by W. Crackanthorpe, Esq., of Newbiggin Hall, and the Hon. Col. Lowther as vice. Amongst the company we observed, John Crosby, Esq., of Kirkby-Thore; John Hill, Esq., of Bankfoot; R. Tinkler, Esq., of Eden Grove; W. Hope, Esq., of Marton House; John. Heelis, Esq., under sheriff; Rev. J. Milner; S Rippon, Esq., Acorn Bank; the Rev. Mr. Bellas; and most of the respectable yeomen of the neighbourhood.

EXTRACTS FROM THE PROCEEDINGS OF AGRICULTURAL SOCIETIES.

At the meeting of the Bolsover Agricultural Society, Mr. Wright, of Romeley hall, in proposing the sentiment "The plough and the pail, the fleece and the flail," observed, "I rise at the request of the president to propose a toast, which I hope I shall be able to do to your satisfaction; but in the first place, I beg to trespass upon your time in making a few observations upon the subject which we have met here upon. When I returned thanks on the part of the Royal Agricultural Society, I said that its great and leading object was to combine practice with science; what science has done for the manufacturing and commercial world is well known to every person: and I doubt not that ere long it will be equally beneficial to agriculture. Looking back a few years, who is there that cannot recollect the pride and admiration of all classes in the posting and coaching departments of this kingdom? all admired the punctuality and dispatch, as well as the splendid equipage of a mail coach, but it is now rarely to be found. Science has substituted a superior mode of conveyance, and such an one as if any person had dared 20 years since to predict would take place, he would have been deemed an enthusiast or a madman. Such then being the case, let us rub off the rust of prejudice from our minds, and dispel the mists of ignorance from our eyes, in order that we may be able to see and understand the best improvements which science is capable of introducing into agriculture. In this room there are several persons who can recollect the time when it was deemed necessary to apply from 80 to 100 bushels of bones per acre—they were roughly broken with a hammer; but as soon as science was brought to our aid in the erection of a mill to grind the bones, it has been found that from 15 bushels to 25 bushels per acre answers equally well; and it is also well ascertained that, in the application of 100, 200, or it may be multiplied to 1000 bushels per acre, no more immediate beneficial results will ensue than from the application of the smaller quantity, as that contains all that is necessary to be taken up in the growth of the succeeding crop; anything beyond that is superfluous and an unnecessary expence, and would be likely to injure rather than benefit the next crop. Speaking on the subject of manure, reminds me of an anecdote which arose from a statement in Lord Hames's Husbandry of Scotland, published about a century ago, and wherein he predicts that the day will arrive when manure for an acre of land will be taken in the coat pockets of the tenant; this called forth a quaint observation, that the produce would be brought home in the waistcoat pocket. Scrupulous as they appear to have been in those days, and unlikely as this would appear to be, we are living in the days when this prediction is literally fulfilled; for in guano and nitrate of soda, two small bags will hold what is amply sufficient for an acre of land; and what proof have we that Lord Hames was not a stout athletic man, and that his pockets were not of size large enough to hold the necessary quantity of these manures? As practical men, you are all in the habit of turning over the heaps carted out into the fields for the turnip crop, and in that operation there is a stench which continues for several days after—this is ammonia, the most valuable part of the manure; we suffer its escape never to return to us again. I have within the last 40 years known many attempts to remedy this, the most prevalent of which was the carting soil from the corners of fields, sides of fences and of roads, to form a bottom to receive the drainings of the manure heap, and after the heap was made, the soil was covered over it about 3 or 4 inches thick: the method succeeded to a certain extent, but I have within the last 20 years seldom seen it practised: the expence in labour was found to exceed the benefit. It is an easy matter to point out the improvements that land is capable of, but the tenant farmer should look to the probability of being remunerated within a reasonable time. I recommend every person to be ready to adopt any improvement he thinks feasible, or well recommended; but all experiments should be tried upon a small scale, so that in case of failure, he would not be materially injured thereby. The schoolmaster is now abroad, and he will not allow us to remain longer idle; we must 'up and be stirring.' I have a tolerably accurate knowledge of the rent of land in most counties, and it is very extraordinary to see the disparity of rent of land of similar quality in different parts of the kingdom, varying from 5s. to 25s. per acre; and the land which bears the lowest rent, from its proximity to the best markets, and from the advantage of climate and other circumstances, the tenantry in the district alluded to are in a more thriving and prosperous condition than the other. Upon reflection and mature consideration I believe the cause of this paradox to proceed from the minutiæ of management; it may be thought trifling to speak of a saving of 1s. per acre for ploughing, but when we add 1s. for harrowing, 1s. for reaping, 1s. for stacking, 1s. for thatching, 1s. for thrashing, 1s. for marketing, &c., &c., the Scotch proverb of 'many a little makes a mickle,' will be verified. To speak of what may be done, or more properly of what is done in some districts respecting the rotation of crops and the general management of land, would require more time than can be spared to-night; but I would refer you to a small publication of Mr. Blacker, giving a description of the cottage cultivation practised upon an estate in Ireland, of which he is the agent, wherein he clearly shows that an acre of land under the sailing system is capable of keeping a cow through the year. This system has been long tried on a large scale in the best cultivated districts in Scotland, and will ere long find its way among us. We are all ready to spare no expence in purchasing bones, soda, rape dust, and the like, but we have it from high authority, that land is capable of producing (under proper management) manure sufficient for itself. We are met here to-day to stimulate each other in the improvement of stock, but let us not be led away by appearances only; our object is profit, we must therefore apply ourselves to raise such stock (speaking of sheep) as will produce the most mutton from a given quantity of food. I have now detained you much longer than I intended when I rose to address you, I must therefore conclude by proposing the toast I was called upon to give—'The plough and the pail, the fleece and the flail.'"

At the meeting of the South Bedfordshire and North Herts. Agricultural Association, at Luton, on the 21st of September, the Rev. T. F. Foord-

Bowes, D.D., of Barton, who had taken a most lively interest in the welfare and success of the society, in furtherance of this feeling most handsomely offered a silver cup, value five sovereigns, to be awarded to the farmer (being in business on his own account,) who shall plough half an acre of land in the best and cheapest manner, he being the holder of the plough. This appeared the great attraction of the day, and from the well known skill of many of the members caused no little excitement.

After the other routine business of the meeting had been got through, the cup presented by Dr. Foord-Bowes was produced. It consisted of a beautiful silver tankard, capable of holding about a pint; the design was most chaste and appropriate, having the plough, harrow, and various other agricultural implements in raised silver round the base and exterior. The applause lasted a considerable time.

The Chairman, in presenting it to the successful competitor, Mr. Bennett, of Lewsey, said—Mr. Bennett: I have great gratification in presenting this cup to a gentleman who has shewn so much skill and talent in performing the arduous task undertaken by him, and who was unanimously considered fully entitled to the reward, and as one who has, in his own person, set an example to his brother farmers in every way so worthy of imitation (cheers).

Mr. Bennett being called for from all parts of the room, responded to the toast, and said—"Mr. Chairman and Gentlemen,—It seems to devolve on me, as one of the most successful candidates of the day, to acknowledge your kindness, and which I do most sincerely in the toast which has just been drank. In one particular (continued Mr. B.) I stand in rather a novel point of light before you—I mean as the winner of this handsome cup, presented by the munificence of the Rev. Dr. Bowes. He (Mr. B.) was no party whatever to the proposal originally; but priding himself somewhat in his ploughmanship in early life, he had a mind to see what he could do amongst his brother agriculturists of this neighbourhood. The Chairman, in presenting this cup, had been pleased to say that it had been won most fairly, and very cleverly; at any rate, he (Mr. B.) wished it to be won fairly, if won at all; for, being aware some of the judges knew him personally, he requested them in the morning, in the event of there being any doubt on their minds, to give his competitors the benefit of that doubt. (Cheers.) (One of the judges called out, "you did, you did!") His old friend Mr. Eve, had evidently followed him up more closely than his other opponents; but the superiority of his (Mr. Bennett's) plough, had done much towards giving him the victory. Mr. Eve, was, however, a good ploughman, and he only regretted that there was not another cup for him. (Mr. B. continued.) If he was fortunate enough to excel in any department of life, he felt himself mainly indebted to the early instruction and counsel of his late revered and excellent father. He was a plain unassuming man, with a very large family. He gave his children but a twopenny education, (which, however, was all that he could afford) and then set them to earn their own living (Cheers.) His unvarying advice was, "Try, lads, to excel; never forget that what is worth doing at all, is worth doing well." I think I may say, that it has been my endeavour so far through life to regard this excellent advice. And by this (I repeat it) I feel mainly indebted for the flattering position in which I stand before you. I shall regard this testimonial not so much for its intrinsic value, as from the recollection that it has been presented to me amid the congratulations of my friends, and as a well-earned trophy. I am glad to find that the show of stock has so greatly improved. There will be some disappointment doubtless among the numerous candidates who will not be able to bear away the prizes. I confess I am one among the rest, more especially as it regards the sheep, I exhibited as extra stock. The judges, however, were placed in great difficulties, and I have no doubt but they did what they thought right. The only way in which meetings of this sort can pass off well and be useful, is for those who wish to win, to try again; and sooner or later they would bear home the laurels (*cheers.*) I calculate on much good from the formation of this association—it is already apparent; it was very evident in the ploughing field this day, and I doubt not but we shall see bad implements exchanged for good ones, and good stock very generally substituted for those which are indifferent. Nor will this society be less beneficial in promoting a spirit of emulation among the labourers (*cheers*). I am afraid I have trespassed already too long; I beg, therefore, in my own name, and in behalf of those other gentlemen included in the toast, to return you our very hearty and sincere thanks (*cheers*).

At the East Suffolk Agriculural Association, there were two ingenious machines at work on the ground for the purpose of making draining tiles, the invention of Mr. Pettitt, of Winston. They were both of an exceedingly simple character, and calculated materially to aid the operation of farm draining, by enabling the agriculturist to manufacture his own tiles, the only knowledge required being the proper mode of tempering the clay, which is soon obtained. The price asked for these machines is 7*l.* 10s. each. From 9 to 10,000 tiles per week can be made with them. The present price of tiling, such as is manufactured by the machine, is 1*l.* 2s. 6d. a thousand, from which it appears that the cost of the machine would soon be saved by the purchaser.

GUANO.

At the recent meeting of the Appleby and Kirkby Lonsdale Agricultural Society, Mr. Crackanthorpe, the Chairman, spoke as follows:—He need scarcely remind those he was addressing, that in consequence of the application of the science of chemistry to the pursuits of agriculture, some wonderful discoveries had lately been made as to the qualities of soils, and their peculiar capabilities for production. Many of those present had tried experiments with the newly discovered artificial manures—such as nitrate of soda, gypsum, bone dust, and guano—a substance brought all the way from the Pacific Ocean for the enrichment of our soils, and the increase of the food of the people of Great Britian (*cheers*). If those who had made the experiments would detail the advantages they had derived from them and their cost, doubtless many would be induced to follow their example. He had himself seen three of these artificial manures tried upon a farm almost adjoining his own —namely, gypsum, bone dust, and guano. They had been applied to the cultivation of turnips; and certainly he could scarcely express the surprise he had felt by witnessing the results. The soil was extremely poor where the experiments were made. The place was known by the name of the Scar Top, in Cumberland, and had been recently advertized for many weeks to be let, but no tenant could be found for it. Mr. Benn had taken the management of it in his own hands, and had sent one of the most intelligent husbandmen he (the Chairman) had ever met with to conduct the operations. The effects of the guano upon this poor soil had been most surprising; and there were now forty acres of as fine turnips upon it as could any where be seen. He hoped Mr. Benn would favour them with a detailed account of his experiments, for they would be listened to with pleasure and advantage (*cheers*). But after all, he (the Chairman) believed the best and the cheapest manure was the dung of the farm-yard. But to make it so, it must be managed with due care and economy; for under the system usually adopted, much of that which was most valuable for fertilizing and enriching the soil was suffered to run to waste. A great portion of what might be called the liquid manure was allowed to escape, as well as the more subtle portion—the gases which are now found to be so valuable. The generality of farmers scarcely knew how to fix and secure the gases, though it was very easily done: they had but to cover their dung heaps with a thin layer of gypsum, or alabaster as it was commonly called, and plenty of which might be had in the parish adjoining that in which they were then assembled. Then, with respect to what he had ventured to call the liquid manure, they had only to make a reservoir in the farm-yard into which it could run, and thus saved for the most important purposes (*cheers*). In his opinion, the science of agriculture could not be too carefully studied, or too zealously followed. When they considered how rapidly the population of England was increasing—that 230,000 additional mouths were every year to be fed in England—to say nothing of Ireland, which every one knew to be so prolific; and that to raise a supply of food for this number, would require an additional 100,000 acres of land to be cultivated: these, he thought, were considerations sufficiently important to induce every one to use his best exertions so to improve our modes of cultivation, as to enable us to raise a sufficient quantity of food for this growing population (*cheers*).

Col. Lowther took the opportunity of observing, on the subject of artificial manures, to which attention had been drawn by the Chairman, that there was much difference of opinion on the subject. At the York Agricultural meeting, Mr. Denison had cautioned his hearers to beware of guano, for by the use of it he had destroyed his crop of turnips (*much laughter*). From his own experience upon the subject he could say little; but from what he had seen, he should be much inclined to recommend the use of nitrate of soda as the best of the artificial manures. At the same time, it must be borne in mind, that that which was best for one kind of soil, was wholly unsuited to another. Perhaps the best advice was that which was the oldest, to plough well and clean well.

Mr. Benn detailed the experiments with artificial manures alluded to by the Chairman, and gave it as his opinion that guano had been the most productive, and next to that, the nitrate of soda.

PRIZE ESSAY ON HAND-TILLAGES.

ON THE APPLICATION OF RAPE DUST AND OTHER HAND-TILLAGES; Prize Essay of the Wetherby Agricultural Association; by John Hannam, of North Deighton, Wetherby; Honorary and Corresponding Member of the New York State Agricultural Society. (Longman and Co., London; J. Cross, Leeds.)

[We will make no other remark on this Essay, than to say most sincerely and emphatically, that every practical farmer who seeks valuable information should have it on his table.—ED. F. MAG.]

"Having seen," says our author, "in the course of this enquiry, what is required from fertilizers *in general*, we shall be in a condition to enquire into their respective capabilities, and to examine,

"1st. 'RAPE DUST,' *as an agent in the process of fertilization*; and the most efficacious and economical methods (with especial reference to the Broad Cast and Drill Systems) of applying it as such.

"2nd. 'OTHER HAND TILLAGES'; and the best methods of applying *them* as means to the same end.

"The process of vegetation, like that of animal growth, depends upon certain conditions. The apophthegm that out of nothing nothing comes, (ex nihilo nihil fit,) applies in this case. We are not to regard every plant as a *direct* effect of creative power. On the contrary, that Power has ordained certain fixed conditions under which the vital principle of the plant becomes developed, and it depends, generally speaking, upon our conformity or non-conformity to these conditions, whether the germ of life shall appear at all, prematurely perish, or attain full and productive maturity. Thus it is necessary that the *seed should be placed under the influence of heat, air, and moisture, in order that it may germinate*; and, after it has germinated, that it should have a medium in which to develope its organs, which medium must be so mechanically constituted as to afford it protection against winds and tempests, and to act as a storehouse for the matters which it requires for the purpose of nutrition.

"Now, when we place a seed in what is termed a *fertile soil*, we supply it with these conditions. The soil is formed with such a mixture of the earths, alumina, or *clay*, silica, or *sand*, and lime, (in a state of carbonate), or *marl*, as to afford both heat and moisture, and to present a medium sufficiently firm to protect the plant against storms, and sufficiently permeable to permit its roots to spread in search of food; and, lastly, it contains the elements of nutrition, as is evidenced by the flourishing growth of a plant in such a soil. If, now, we place a seed in what may be termed a pure soil, *i. e.* one composed only of the earths, alumina, silica, and lime—that soil will supply the seed with moisture, heat, and air sufficient, it will afford it a favourable medium in which to develope its organs, and yet the process of vegetation will not go on properly. The reason of this is, that the soil does not contain a supply of those matters which the plant requires as food. Hence we learn that the soil itself is not that *pabulum*, or food, necessary to form the structure of the vegetable.

"The organic elements constitute, on the average, 90 per cent. of the plant. The sources from which they are obtained must, therefore, be of the highest importance. How, then, is the Carbon in the plant acquired? Carbon constitutes *one half of vegetables.* Charcoal is the form in which *carbon* is most generally found. The diamond is carbon in its *purest* form. Lamp black is carbon in a more impure form than charcoal. Pure carbon burns without ashes, its entire substance being converted into a gas, termed carbonic acid. Carbon, too, is insoluble, and cannot be taken up in its simple state by the minute pores of the root. In fertile soils, however, there is found much vegetable matter; and during the decay of this, carbonic acid is formed, and part of it escapes into the atmosphere; the remainder is absorbed by the roots of plants, along with water, or in its gaseous form. This is proved by the fact that plants flourish best in soils which yield carbonic acid from vegetable decay. The manner in which this carbonic acid is formed is easily understood. All decay, chemically speaking, is merely the combustion of matter by the action of the oxygen in the air; and, during this combustion, a part of the oxygen becomes combined with the carbon in the decaying substance, and forms the carbonic acid which is requisite to supply the growing plant with its carbon.

"But plants cannot obtain all their carbon from the soil. Thus, in a wood, where no vegetable matters are applied, trees continue to flourish, when it is evident that if they drew all their carbon from the soil, it would in time become exhausted. Instead of that, the soil increases in vegetable mould (or humus) every year. A proof that the leaves, &c., which fall to the earth return more carbon than the roots have absorbed. The plant, therefore, must have derived a large proportion of this carbon from some other source. This source is the atmosphere (which is composed of oxygen, nitrogen, and carbonic acid;) for plants have been proved to *absorb*, by their leaves (during sunshine) carbonic acid, and to give off, or *exhale, oxygen.* Thus, if the roots of a plant be placed in water containing carbonic acid, the gas will disappear—a proof of the manner in which the acid formed *during vegetable decay* in the soil is taken up by the root. If, however, *the leaves* of a living plant be introduced into a vessel containing water and carbonic acid, and exposed to the action of the light, the gas will disappear; and, if the process takes place under a receiver, an equal bulk of oxygen gas will be found—a clear proof that the *leaves of plants absorb carbonic acid gas (during sunshine) from the air, and give off oxygen.* And, as carbonic acid is composed of its *own bulk* of oxygen, and a certain weight of carbon, it will be seen that the plant retains the carbon it absorbs, for *the purpose* of forming the vegetable structure, and returns the oxygen to the air. Oxygen, however, is a constituent of the plant, and, even, should not all be returned that has been absorbed by the roots and leaves, it is evident that it will be of use in forming the various matters of the structure.

"It may be said that if this be the case, why does not the constitution of the atmosphere alter? Carbonic acid is but a trifling ingredient in the air, and would be soon exhausted! Yes; but we have shewn that it is continually arising from the natural decay of all bodies containing carbon. When, too, we breathe pure air we emit impure—we inhale the atmosphere which contains but 1 gallon of carbonic acid in 2500 of air, but we exhale a fluid which contains 100 gallons of carbonic acid in the same quantity of air. Here, then, are unfailing sources of supply.

"During night too, the plant emits a certain portion of the carbonic acid which it has absorbed during the day, and not made use of in the formation of its structure.

"Can we, then, fail to admire the wisdom and benevolence of the design by which that which is necessary to the living plant should be supplied by the dead, and that which is not required by man should minister to the wants of vegetation, and tend to supply him with the necessaries of life in another way? In order, however, to appreciate it fully it should be remembered that carbonic acid gas is deadly to human life. We cannot live over a pan of charcoal. We cannot breathe the atmosphere we exhale (witness the Black Hole at Calcutta.) He has, therefore, spread to the breeze millions and millions of mouths, in the leaves and roots of the vegetable world, to feed upon that which is injurious to us, and to give out an equal supply of that which our bodies require.

"Rape dust, the seed of the rape plant after the oil has been extracted from it, is a fertilizer of great value. It contains matters highly essential to the growth of vegetables. Thus, according to the analysis of M. Boussingault (Annales de Chemie et de Physique, September, 1841,) 8 tons of rape dust afford as much *nitrogen* as 100 tons of farm yard manure. According to Dr. Madden, (Prize Essays of the Highland Agricultural Society, June, 1842,) it is *greatly superior* to farm yard manure in soluble organic matter, *equal* to it in phosphates, and *inferior* to it slightly in saline matters; or, taking altogether, that 1 ton of rape cake equals 18.42 tons of farm-yard-compost.

"From this analysis we should be justified in concluding,

"1st. That rape dust is a potent fertilizer; for we have in the preceding pages shewn that plants require a large portion of vegetable and animal matter to afford a supply of carbon, in the shape of carbonic acid, and of nitrogen, in the shape of ammonia; both of which are evolved during the decomposition of organic substances.

"2nd. That rape dust is most valuable to grain crops; first, because all grain crops require more organic matters from the soil than green crops, the latter of which derive the principal part of these elements from the air by their leaves, and a large quantity of inorganic matters (phosphates, &c.) from the soil; and, secondly, because *all* plants require a supply of nitrogen to *perfect the seed;* which nitrogen rape dust possesses, as will be seen above, in an extremely large proportion.

"3rd. That rape dust is extremely quick in its effects, and consequently not lasting, because it contains such a large proportion of soluble organic matter, and so little of the earthy inorganic substances, (or, more plainly, so little ashes,) that fermentation and putrefaction take place immediately; whence its carbonic acid and ammonia are supplied to the roots of the plant in large proportions at the commencement of its growth, and if not taken up escape into the atmosphere. In corroboration of this tendency to ferment quickly, it may be stated that out of 100 parts of rape dust Dr. Madden found 24.7 (or nearly ¼ of the whole) was dissolved in cold water; 'the first waters were of a pale yellow colour, whereas the latter were *red*; proving that the tendency to decomposition was so strong that it had commenced during the process of the analysis.' (Vide Prize Essays of the Highland Society, June, 1842, page 529.)

"In illustration of its *particular value* as a manure for *grain crops* I need only refer to its common use for such crops in all parts of England. A ride round the neighbourhood of Wetherby will convince the most sceptical of its efficacy, if they observe the crops produced on many soils, by the application of from 8 to 16 bushels per acre.

"The quick effect of rape dust upon the growing crop, and its speedy escape from the soil, are matters which the experience of every farmer will have taught him.

"From this view of the elements of rape dust, and of its general operation, we deduce the following practical conclusions to regulate its application with respect to corn.

"1st. That rape dust being so beneficial to the growth of grain in general, it is most marked in its effects *upon thin, poor soils.*

"2nd. That it does not operate so well in a dry season as in a moist one.

"3rd. That it is most *certain* in its effects upon the winter-sown wheat crops; but, in *favourable seasons,* most remunerative on the spring crops.

"4th. That it answers best on strong soils for the wheat crop.

"5th. That it is not judicious to apply large quantities at one time.

"6th. That it is necessary, after using rape dust for several rotations, to apply a dressing of saline and earthy matters."

Our space does not admit of our extracting the rational and scientific explanation of these several dogma, we must refer to the essay itself for the able elucidation of this part of the subject.

"The customary methods of applying rape dust, though varied in detail, are *but two in principle.* The principle of the one is to spread the matters applied to the soil over the whole surface—this is the broad cast system. The principle of the other method is to place the seed and manure in straight rows, or drills, at a regular depth and at a regular distance from each other—this is the drill method.

"Under the *broad cast system* the rape dust is applied as a top dressing, upon the level surface before the seed is drilled, or upon the furrow before the grain is sown by the hand. By the *drill method* the tillage is deposited below the grain, and at the same time.

"There are certain other methods of applying rape dust, &c., but they cannot be termed *systems,* being merely special modifications of one or both of the above, and only used in *special* cases.

"Of the two great systems the opinion of the writer is that the drill method has many decided advantages. In saying this he can claim no credit. At a time when the system has become part and parcel of the four-course husbandry, and in a neighbourhood where it is employed so extensively, it would be impossible, seeing its beneficial operation, to entertain a different opinion. At the same time there are those to whom this sort of testimony is valueless. Some regard *all custom* as doubtful until its advantages are shewn to depend on rational principles; and others think no customs good but their own. To these, then, it is necessary to shew that the advantages we claim from the drill method are as explicable by reason as by fact.

"The advantages for which we contend involve *a saving in the cost*, and a *gain in quantity*, of produce.

"Thus, by using rape dust, upon a broad cast system, as a top dressing, a great portion of its nutritive gases is wasted in the atmosphere owing to its quick decomposition. By spreading it over the broad surface, before the seed is drilled, a loss arises from the same cause; for, as the tillage is not an immediate proximity with the seed, a portion of the ammonia and carbonic acid given off during its quick fermentation is absorbed by the weeds, or escapes into the air, before the young plant can send its fibres in search of it. An instance of the rapidity with which the nutritive gases escape from the soil, is given by Dr. Madden (Prize Essay 'On the Effects of Drainage,' Quarterly Journal of Agriculture, Dec., 1841). He passed a stream of *ammonia* for an hour, into dry soil; upon weighing it he found that it had retained only 1½ per cent. of its own weight of gas. 198.6 grains held 3 grains of ammonia. The soil was then wetted and exposed to the atmosphere, and in three hours it was found to have lost 1.8 *grains of the gas.*

"Again, *carbonic acid gas* was passed over 207.2 grains of soil for an hour, when it was found not to have increased in weight sufficiently to be appreciated—it had not retained 1 40th per cent. of carbonic acid.

"The gain in the *quantity of produce,* from an application of rape dust on the drill system, is thus explained.

"We know that the plant in its infancy feeds upon the matter in the seed. But after it has developed certain fibres, it begins to take up nourishment from the soil, while the green leaf, or shoot, which it has sent upwards, extracts carbonic acid from the air. We know, also, that if its fibres find no food near, they increase in number and length, and spread over a large surface. Thus we find that plants growing in very poor soils have an immense number of fibrous roots, and a poor stunted stem. The reason is that the plant has exhausted its vigour in its efforts to maintain life; for these numerous roots have been formed at the expense of the matters which ought to have assisted the growth of the stem. By placing, therefore, the manure under the seed, the plant will have no necessity to exhaust itself by such fibrous extension; and, as decomposition will be going on at the time when the plant is rearing its stem and putting out the green leaf, it will be well supplied with liquid and *gaseous food at the most critical period,* and consequently will be able to develope a stouter stem and leaf, and in less time than if the manure was further distant or more diffused. Indeed it is a matter beyond question that the sooner the plant escapes from that state of transition in which it cannot be said whether it derives its food from the seed, the soil, or the atmosphere (the state in which it is commonly said to be 'spaining')—the sooner its organs for extracting its food from the air and the soil are developed, the more vigorous will be their growth, and the more efficient their use in the process of vegetation.

"From the drill method of applying rape-dust the plant also derives a *a better supply of moisture,* so necessary to supply it with oxygen and hydrogen, to form ammonia with the nitrogen in the manure, and to dissolve the inorganic matters it requires—that moisture without which every farmer is aware no crop can be productive.

"Let it not, however, be forgotten that 'to every rule there is an exception;' hence, though we contend for the drill method *as a system,* there are cases in which its use would be injudicious. Thus upon stiff soils, in wet weather, it would not do to use the drill, as the treading of the horses has in such cases an extremely evil effect. The adhesive nature of the soil, in such condition, prevents the machine from doing its work properly. Upon clover stubble, or light soils, *pressing* is attended with advantage, as it gives to the root of the plant a firm sole, and affords it a better mechanical support against the storms of winter.

" *Ribbing*, too, is a method which answers very well in certain cases. Its trouble and expense, however, does not allow it to be adopted as a system. In cases where it is intended to apply a *large quantity* of rape dust I would recommend its use; as the tillage and seed are spread over a broader surface than by drilling. There is, therefore, no danger of the fermentation of the manure injuring the germ of the seed. Ribbing and pressing can neither be considered of the broad-cast nor drill system. They may be termed *broad-cast*, inasmuch as the seed is sown from the hand; and of the *drill method*, inasmuch as it is placed in rows or drills. An open seam or furrow being made in both cases, in which the seed and manure fall.

" *Dibbling* is attended with some advantages—seed and manure are economized; but labour is increased. Upon light soils, when seasons are favourable, and a farmer has plenty of labourers, and but a small breadth of land to sow, it will answer very well. Upon many soils, however, the pressure of the feet is injurious, and if we have any extent of land prepared, it is in few, very few cases, that we ought to risk the loss of a seasonable seed-time by adopting such a slow process.

" We come now to consider the application of rape-dust upon turnips.

" From what we have already said of its nature and operation it will be concluded that we do not consider rape-dust so efficacious a tillage for turnips as for corn. The reason is that the turnip requires a larger portion of inorganic matter, such as phosphate of lime, to perfect its growth, which phosphates we are in the habit of supplying by the use of bones, while rape-dust contains but a small proportion of these matters. They, therefore, cannot be supplied by an application of rape-dust. Let us, however, not draw *too general* a conclusion from this fact. It should be remembered that the turnip is a plant subject to many enemies during its infancy, and that it has a large system of leaves, by which it extracts nourishment from the air (hence the bulb is generally found to be in proportion to the size of its broad leaf); it, therefore, should be our object to give it such manure as will act readily, and cause it quickly to develope those leaves by which it may draw its carbon from the atmosphere, and become, in one sense of the word, independent of the soil, and out of danger from insects, &c.

" Now, rape-dust is a manure which, containing a large share of soluble organic matter, acts quickly; it seems, therefore, especially adapted to assist the turnip in the *early stages* of its growth. As, however, it cannot supply the *earthy portion* of the plant, it is obvious that it will succeed best upon soils which contain a sufficiency of these earthy phosphates, lime, &c., or when combined with bones, or some other matter containing a supply of these inorganic substances.

" The fact of the extensive use of rape-dust in some districts, for turnips, is proof enough that, under the former circumstances it may be used successfully. The latter position we have fully proved —*on several portions, and to the extent of several acres*—during the present year. One bushel of rape-dust to three bushels of bones is an excellent mixture. The turnips we have so manured testify this at the present moment. Supplied by the rape-dust with ready nutriment, they grew away quickly; and, when the bones began to decompose, the young plant was ready to make use of their phosphates.

" Much of the success of rape-dust *alone* for turnips depends on the method of application. Thus, if the seed be placed in *immediate* contact with the dust, the active fermentation of the latter will destroy the tender germ. In order to guard against this it is better to mix the tillage with a little earth or ashes. The tubes should also be affixed to the drill, to convey the seed to the ground, so as to fall immediately after the tillage. By this means a thin layer of earth will protect the seed, and the young plant will have all the benefit of an immediate supply of food without danger of injury.

" As a manure, also, for *potatoes*, rape-dust is not unfrequently used. Like the turnip, the potato extracts a great supply of food from the atmosphere. It contains, also, a larger share of nitrogen than the turnip. It requires, therefore, a ready supply of food, in order that its leaves may come into use as soon as possible; and in this food there should be nitrogenous matter. Rape-dust, acting as we have already shewn, and containing so large a proportion of *nitrogen*, appears adapted to supply its wants. But the potato also requires a *lasting* manure; nitrogen is necessary in the latter stages of its growth, and rape-dust is not calculated to afford a long supply. For this reason it will be necessary to be liberal in the quantity used: NOT LESS than four quarters per acre should be applied.

" With this a mixture of a few bushels of gypsum would have a beneficial effect. It would prevent the too sudden escape of the ammonia (or nitrogen) of the manure, as it will be hereafter shewn that it possesses the property of "*fixing*" this gas in combination with one of its own component matters. It is most extensively used along with manure for the potato crop in America, and according to the best authorities, with success.

" Although, then, we should be inclined to say to the farmer, use farm-yard manure for your potato crops, and rape-dust for your corn and turnips, there can be no doubt but that if the latter be applied liberally, in cases where farm-yard manure cannot be had, a remunerative return may be obtained."

AGRICULTURE.

(From the Gardeners Magazine.)

NOTICE OF A COMPARATIVE TRIAL OF THE QUALITIES OF VARIOUS PURE EARTHS FOR SUPPORTING VEGETATION, MADE IN THE GARDENS OF MESSRS. DRUMMOND, AT STIRLING. COMMUNICATED BY MESSRS. W. DRUMMOND AND SONS.

Oats sown in the middle of April, reared in pots 8 inches in diameter, three plants in each, and plunged to the rim in an open border, cinders being put under them, and care otherwise taken that the roots should obtain no extraneous nourishment. The plants are watered a few times in very *dry* weather. The stalks were in general about 3 feet in height. The grain fully ripened.

PRODUCE.

Earths.	Ears.	Grains.
Granite (Aberdeen)	13	220
Clay-slate (primitive)	11	241
Greenstone, secondary trap	10	245
Limestone, tertiary formation	9	251
Chalk	13	355
Gypsum (very sickly plants)	6	40
Sandstone, of the newer formation	12	230
Pit sand, brown siliceous	10	210
Blue clay from a tilled field, 10 ft. under the surface	10	242
Mixture of the above	9	190
Common light loamy soil	13	453

These experiments seem worthy of further prosecution, particularly relative to the respective influence of the atmosphere and soil on vegetation, in the furnishing and assimilating of the food of plants. The oats were sown at our nursery grounds in the middle of April, and ripened in the beginning of September.

ON SAW-DUST AS MANURE.

BY HENRY H. DRUMMOND, ESQ., OF BLAIRDRUMMOND, M. P.

"The observations on saw-dust as a manure, in the March number of the Transactions of the Highland Society, induce me to mention, that I have for a number of years been in the practice of using saw-dust in agriculture. I have not, however, used it with dung in the manner mentioned by Mr. Sim, but have kept it in composts for about three years, which time has appeared to me necessary for its proper decomposition. This process is greatly facilitated by mixing the saw-dust with lime in the proportion of about one-tenth part of lime, and the compost is much improved by the addition of road-scrapings, or earth of any sort that can be procured. The saw dust heap is a convenient place of deposit for dead animals, which are thus disposed of to great advantage. A compost of this kind, which has been well mixed and decomposed and turned over by the spade at proper times, will produce an excellent crop of turnips." —*Quarterly Journal of Agriculture.*

In addition to the above observations of Mr. Drummond's we would consider it of great advantage to the quality of the compost, if the situation of the farm offices permitted it, were the drainings from them made to run into the heap—the bottom of which might be slightly hollowed out to prevent any surplus of the liquid from being lost. If this plan were adopted, it would be necessary then to use gypsum instead of quicklime to retain the ammonia already existing in the drainings, or which might be formed during the decomposition of the heap. The decomposition would be greatly accelerated by repeated turnings, as it is established beyond a doubt that new combinations are more readily, or indeed only formed when animal and vegetable matters are in a moist state, at same time retaining a portion of air sufficient to furnish the oxygen and nitrogen that may be necessary. Either complete immersion in water or compression, prevents those combinations from taking place.—*Perth Constitutional.*

BONES AS MANURE.

FROM THE BELFAST NEWS LETTER.

No manure has of late excited more sensation than bones. It was more especially the English who fixed attention upon them, assuring us that some sorts of agricultural produce have been doubled and trebled by the use of bone-dust. Not satisfied with the bones procurable in their own country, they have been brought for the last twenty years from all parts of Europe to England, and are used with perfect success. Notwithstanding the great repute in which bone manure is held by the English and other nations, it has made but little progress in Germany! Whence does this arise? I am of opinion that the German soil (in such places where bone manuring has been practised without success) is not yet exhausted of bone earth, (phosphate of lime,) whilst the soil of England has been so much exhausted of it by the continual growth of wheat, that it cannot be called into new fertility, without either a manuring with bones, or a phosphate of lime therein contained. That it is this substance to which bones chiefly owe their manuring quality, is proved satisfactorily by the circumstance, that even burnt bones, in which, therefore, the whole of the cartilage containing nitrogen is destroyed, still yield a superior manure. Of this I have become convinced by comparative experiments, which I repeated more than once. Moreover, these bones will yield manure, which, by a protracted boiling, have been deprived of their cartilaginous matter; for instance, the sheep bones used in making paper or glue. I have often found that manuring with bones produces a most decided effect upon soil which contains none or very little phosphate of lime, provided such soil was not deficient in humous earth, the solvent of phosphate of lime. I have also remarked that bone dust is nearly useless, if the soil was not deficient in this phosphate. Amongst the countries where manuring with bone dust has proved useless, Mecklenburg is one; and although I cannot possibly assert that soil contains a sufficient quantity of phosphate of lime, yet this is more than probable, because all the marl with which, for the last twenty years, the fields of Mecklenburg have been manured, contains a great deal of phosphate of lime. If only 50,000 lbs. of marl were conveyed upon a Magdeburg acre, and if this did not contain more than one per cent. of phosphate of lime, still 500 lbs. of this salt would thus, by the agency of marl, have been brought upon that space of ground, and this is more than enough to supply a crop with sufficient phosphoric acid; and the more so because wheat, which chiefly requires it, is not much grown in Mecklenburg. If, however, the phosphate of lime in bones (56-70 per cent.) be the substance to which they chiefly owe their manuring qualities, still we must admit that the other substances contained in it also advance vegetation, especially their cartilage, rich in nitrogen: so, also, fluate of potash, which they contain in small quantities (10 lbs. in 100 lbs.) may be reckoned amongst their manuring principles, as indeed is the more probable when we consider that human bones, which are the richest in fluate of potash, are the most efficacious as manure. That, however, after phosphate of lime, cartilaginous matter is the most important agent in bone manure, becomes evident from its weight being one-third of the whole, and containing 16-17 per cent. of nitrogen. If for instance, one Magdeburg acre be manured with 1000 lbs. of bone-dust (which, no doubt, is a large quantity,) 50-55 lbs. of nitrogen would thereby be brought into the soil, and this must exercise a considerable effect on vegetation; for, according to the experiments of Boussingault, 1000 lbs. of wheat do not contain more than 24 lbs. of nitrogen, and 1000 lbs. of wheat straw not more than 3 lbs. of nitrogen. If we therefore assume that the Magdeburg acre will yield 2000 lbs. of wheat, and 3000 lbs. of straw, the cartilage would yield the quantum of nitrogen for one crop, even if the wheat could not obtain any other nitrogen from other substances in the soil, nor absorb any through the leaves from the air; since, then, cartilage is an important substance in bones, it is evident that those which have lost that ingredient by lying for a long time in the air cannot yield such good manure as fresh ones. Bones are also rendered fertilising in consequence of their containing soda and common salt; 1000 lbs. of them contain 35 lbs. of these substances, and it is known from experiment that 60 lbs. of common salt are sufficient manure for one Magdeburg acre. Moreover, their containing phosphate of magnesia (a substance especially found in wheat) must also be advantageous, for in 1000 lbs. of bones, the usual quantity of manure for an acre, 30 lbs. of phosphate of magnesia are to be found. The small quantity of fat and marrow which bones contain is scarcely to be taken into account, although some have laid much stress upon it.—*From the German of Professor Sprengel.*

ON SOWING BARLEY.

Observing in your last number of the *Farmers' Magazine* a paper by Mr. M. T. Bass, "on the growth of barley, and how seven quarters per acre may be produced," I noticed an allusion to the practice of drilling corn on principles which have for a long time occupied my attention, and which have induced me to construct a drill so as to approach as near as possible to the natural mode of broadcast sowing. I have been long convinced of the too artificial manner in which the seed is deposited by the drills in general use, being by far too much crowded—an objection which has led very extensively to a strong prejudice against the system of drilling altogether. I have at length succeeded in meeting this objection, and hundreds of acres may be seen here, in which the seed is evenly distributed over the whole surface, the rows being scarcely discernible. From the peculiarity of the drill shares, which have in each of them a *seed chamber*, we have combined all the advantages of broadcasting, dibbling, and drilling, with none of their disadvantages. I invariably employ it on my own land, and thousands of acres have been drilled with it in this neighbourhood. It is, moreover, the cheapest drill in use; the lightest in draught, requiring only a pair of horses with the manure box; and will deposit manure with corn or turnip-seed to any extent, and at the rate of from ten to twelve acres per day. Any of your readers wishing to obtain this valuable implement may obtain the necessary information by applying to me as above.

I am, Sir, yours respectfully,
THOMAS COOMBS.

Lower Wallop, near Andover,
Hants, Nov. 8, 1842.

FARMING IN THE LOTHIANS.

TO THE EDITOR OF THE FARMERS' MAGAZINE.

SIR,—I am sure your readers must feel indebted to you for inserting, in your last number, Mr. Greg's interesting and intelligent letter on the management of land in the Lothians, which has been attended with such permanent advantage to the landlord, and has manifested its happy results in the prosperity of the tenant, and contentment of the agricultural labourer.

In the comparative estimate, however, between the rents paid by the English tenant and his brother-farmer in Scotland, he has omitted to state whether the same burdens *besides* the rent fall on *tenants* in a similar manner in both countries. In England and Wales very generally the poor, high-road, and church-rates, and repairs, are defrayed by the tenant. If this be not also the case in Scotland it makes a vast difference in the comparative estimate of the *bonâ-fide rent* paid by the tenants in the respective divisions of the kingdom. If Mr. Greg will be so obliging as to give some information on this subject, he will much gratify many of your subscribers, and none more than myself; who believe that Britain, if improved to the extent that it is capable of, will ultimately triumph over the present, or any future inconvenience that any tariff may offer.

AGRICOLA CAMBRENSIS.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—In your magazine for the month of October there appeared a letter signed Robert Hyde Gregg, which, to me, contained some extraordinary statements and description upon the Lothian system of farming, and the amount of profits the Lothian farmers derive. Such statements may do very well for a gentleman just arrived home from a tour to sit in his library and write on paper, but to make them public to be read by practical men without giving a full explanation of how such statements can be true, is, I think, little short of folly. I do not believe that, according to present prices, if a man possessed a farm (340 acres, shown as No. 3 in Robert Hyde Greg's letter) of his own, he could by any possibility net a profit of one thousand a-year clear, and much less if he had 1,700*l.* a-year rent to pay. I confess I do not like calling upon editors to explain every thing that may happen to appear in their periodicals, but as you profess to publish a work for the benefit of practical agriculturists, I must say I consider you bound to call upon any person to explain his views more fully when anything so absurd has been thrown out, calculated to raise the fruitless expectation of many an avaricious landlord, tending to the oppression of many a hard working tenant; therefore, as one of your old subscribers, request you will enquire very particularly into this matter, and report in your next number accordingly. I remain, yours, &c.,

Nov. 10. A TENANT FARMER.

P.S.—I have by this post sent a copy of this to Robert Hyde Greg, in order that he may, if he likes, in the same number attach his rejoinder. Mr. G., in the early part of his letter, declares himself unable to go into details, but in this case he will, I hope, get his learned old Lothian bailiff to assist, and perhaps his Scotch friend who introduced him to the Lothian gentlemen farmers also.

ON THE APRIL WHEAT.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—Seeing in your last month's magazine a letter from Mr. Tylden, giving an account of his experiment with a particular kind of compost, and also with the *April wheat*, in which he comes to a conclusion unfavourable to the latter, I am induced to beg a page in your next month's number, for the purpose of making an observation or two on Mr. Tylden's communication, and also of stating the results of my own experience on the growth of April wheat.

First, then, I think Mr. Tylden was wrong in mixing up the April wheat, with whose habits and qualities he was previously unacquainted, with an experiment on a new kind of manure.

Secondly, I think I can point out one cause of Mr. Tylden's failure, viz. :—*that he dibbled his wheat*. Dibbling wheat has at all times a tendency to make it grow rank and coarse, and to make the ear in particular, what he terms "*loose jointed*." Now the April wheat, though by no means a coarse wheat, yet is naturally very soon in the ear; and on this account, as well as from its quick growth, not allowing much time for tillering, it is, I should say, of all wheats, *the least adapted for dibbling*. On the contrary, it should be sown at the rate of not less than two bushels per acre—by drill—on *very finely pulverized land*; and even in this quantity, it comes up rather thick in the rows, which seems desirable.

I cannot *insist too strongly* on the necessity of *having the land firm*; it should be *fit to receive barley*, otherwise the wheat will not do so well. Wherever I have heard of its failing, or partially failing, I have had reason to know or to suspect that the land was not *sufficiently pulverized*.

I will now give you the result of my own experiments—carried on through the kindness of the gentleman who first introduced the April wheat into this neighbourhood—for two years, premising only that I had intended to defer my report until I should have thrashed out my crop, which would have enabled me to make it more accurate and circumstantial. But I am anxious by a statement of facts to counteract the impression likely to be made by the publication of Mr. Tylden's imperfect experiment.

In 1841, I sowed my main crop on the 24th of April; the rapid growth and flourishing appearance was the admiration of all who saw it. It was reaped the last week in August, and produced 40 bushels per acre, weighing 61½lbs. per bushel, and being all required for seed, it was not tested by the miller. A small piece was sown on the 30th of April; it also grew well, was reaped about a week later, and produced at the same rate.

This year (1842) my main crop was sown on the 19th of April, and though the weather was then extremely dry, and continued so for two or three weeks, I was astonished to see with what quickness and regularity it made its appearance above ground. It was reaped on the 12th of August, and is not yet thrashed, but I calculate on having from 36 to 40 bushels per acre. The quality of the wheat is better this year than it was last; and some of my workmen, who grew some of it for their own use, report very favourably of it. One of them has sold a sack to an experienced miller for 27s., the very highest price of the market, it weighing 12 *score and* 18*lbs.* Another has had a sack ground, and assures me the flour is equal both in *quantity and quality* to that of *any other wheat*. I have had also several very favourable reports from farmers in this county who have grown it—some of them on a large scale; and I have heard of some who have expressed their intention of substituting it in future, either in part or wholly, for their usual spring corn.

My present impression from all I have seen and heard of it is, that the April wheat is to be ranked amongst *those of the first quality*. But if it should ever turn out to be only a *second-rate wheat*, still its capability of being sown so late, its early maturity, its good productiveness, and, I may add—from the report of a friend, as well as my own experience—its freedom from blight of every kind, cannot fail to constitute it a valuable acquisition to the farmer.

I ought to add, that I sowed this year small patches on the 7th and 21st of March, and on the 7th and 20th of May. The Lenten sown did not come up so regularly or kindly as the April sown; but the ears were finer, and the produce about equal. That sown in May grew kindly and ripened well, but as it remained standing several days after the crop was carried, and was sadly trespassed on by the birds, I cannot give the comparative yield. I should, however, estimate even that sown on the 20th of May, at not less than 7 sacks; and the appearance of the corn was equally good with the rest of the crop.

Daniel's Manure.—I sowed part of my main crop on two ridges of land which had borne white straw crops two years in succession, without any intermediate crop, or any manure. These two ridges I dressed with Daniel's manure, previous to sowing, at the rate of 24 bushels to the acre; and I had the satisfaction to find that the wheat on them was equal in appearance and in produce to the average of the crop, though some of the land had been highly manured for the previous crops of carrots and mangel wurzel.

I remain, Sir, your obedient servant,

Wilts., Oct. 22nd. A Constant Reader.

Senecio Jacobea, common ragwort, (by the country people *weebus*,) is a troublesome guest, as it never fails to infest rich pasture fields; it is not only a robber, but overshadows the grass and renders it unwholesome. I am at a loss, however, says Kames, whether to call it a weed or an useful plant. As it bears no seed till the third year of its growth, it cannot propagate in land under tillage; in pasture land it dies, indeed, after dropping its seed, but new plants spring from that seed and have a succession without end. Many things in appearance noxious have been found useful, of which this plant is an instance. The same means will prevent its noxious effects, and make it profitable. Ragwort was never seen in a field pastured with sheep. Why? because that animal is excessively fond of it. This I first saw proved upon the haughs of Clova; for no sooner is a flock of sheep brought down from the hills than they run across a field in a few minutes, picking all the ragwort leaves they can find out of the earth. Therefore in every pasture field, for some years after it is laid down, there ought to be a proportion of sheep. They prefer ragwort before any other vegetable; and experience pronounces that every food is wholesome which an animal is fond of. Lincoln sheep do best, because a fence sufficient for horned cattle is more than sufficient for them. Sheep are also singular with respect to other food. They are fond of the tender shoots of broom and whins, and no less so of the fruit of the horse-chesnut.—*The North British Cultivator*.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The Council held their first meeting of the session at the Society's House, in Hanover Square, on Wednesday, the 2nd of November. Present—Henry Handley, Esq., in the chair; Marquis of Downshire, Sir Hungerford Hoskyns, Bart., Colonel Austen, Thomas Raymond Barker, Esq., French Burke, Esq., C. R. Colville, Esq., M.P., James Dean, Esq., Humphrey Gibbs, Esq., W. Fisher Hobbs, Esq., George Kimberley, Esq., John Kinder, Esq., Rev. W. L. Rham, Professor Sewell, and William Shaw, Esq.

Col. Challoner having presented the Report of the Finance Committee, which was read and confirmed, Mr. Handley laid before the Council the various letters received in reply to the letter addressed by him to members in arrear of their subscription. These letters were taken into consideration by the Council, and referred, with other documents, to the Finance Committee for a special report.

Mr. Dean presented the Report of the House Committee, detailing the execution of the various works entrusted by the Council to their care during the vacation, which was read and confirmed.

Mr. Handley reported the correspondence which had taken place between himself and the Chairman of the Great Western Railway, in reference to complaints made by exhibitors at the meeting at Bristol, of the unusual charges demanded for the conveyance of their stock, &c., on that occasion along the line of that railway. The Council discussed this subject at great length, and finally resolved, that Mr. Handley should be requested to enter into further communication with the Chairman of that Board, and take such steps on the subject as may seem to him most desirable.

Mr. Hobbs having brought forward the motion of which he had given notice at the close of the last session, it was resolved, that the Council consider it desirable that further assistance be granted to the Secretary, of one or two additional clerks, and that it be referred to the Finance Committee to consider and report upon the best mode of carrying out this object.

Meeting at Derby.

Mr. Colvile, M.P., Chairman of the Derby Local Committee, reported the result of his communication with the proposed members of that Committee, when the Council unanimously confirmed the following nominations:—

C. R. Colvile, Esq., M.P., *Chairman*.

Stephen Gamble, Esq., Mayor of Derby,
Sir Henry S. Wilmot, Bart.,
William Evans, Esq., M.P.,
E. S. Chandos Pole, Esq., } *Members*.

Mr. John Bromley, *Secretary*.

The Council decided that the Deputation for the selection of suitable sites for the Annual Country Meeting of next year should proceed to Derby for that purpose on Tuesday the 15th instant.

The Council also determined that the principal day of the show on that occasion should be fixed for Thursday, the 13th July, 1843.

Mr. Chawner, Secretary of the Lichfield Agricultural Society, communicated to the Council the willingness of the Members of the Managing Committee of that Society to afford every assistance in their power in completing the arrangements for the meeting.

Mr. Handley gave notice that he should move, at the next monthly council, the specific appropriation of the 300*l*. in prizes for agricultural implements to be awarded at the meeting at Derby; and that there be purchased for the Society two standard dynamometers (or draught-gauges), one for ordinary purposes, and the other for a greater amount of draught; at the same time submitting a proposition for the allowance of more time being granted to the Judges of Implements in future.

Mr. Shaw also gave notice, that he should move at the same time that the trial of implements entered for competition for prizes be made some time previous to the Country Meeting, and that any trial made at the meeting be merely for the purpose of showing the manner in which they perform their respective operations.

General December Meeting.

Mr. Pusey, M.P., communicated to the Council a recommendation that Dr. Lyon Playfair be requested to lecture before the Society, at the Christmas Meeting, on the very interesting subject of the application of the Principles of Physiology to the fattening of Cattle; when the Council unanimously resolved that Dr. Playfair should be requested to deliver such a lecture on one of the evenings during which the rooms of the Society would be thrown open to the members on that occasion.

The following communications and presents were made to the Society:—

Mr. Dean.—Specimens of Dr. Webb's new Sainfoin and Wheat.

Mr. Shaw.—A copy of the "Farmer's Almanac," for 1843, and Mr. West's Remarks on the Turnip Question, and on the use of the Subsoil Plough.

Professor Lowe.—A copy of his work on the Domestic Animals of the British Islands, describing the various races naturalized in this country, or which have contributed to form those races, to illustrate their form and character, to explain the principles of breeding, and to correct the errors which prevail in practice.

Mr. Chadwick.—A copy of his report on the Sanitory Condition of the Labouring Population in Great Britain.

Mr. Selby.—A copy of his work on British Forest Trees.

Mr. White.—A Series of the Proceedings of the Meteorological Society, and other documents connected with the subject of atmospheric changes.

Mr Wright (of Romeley).—Copies of his Prize Essays on Cattle, and the Breeding of Sheep.

Mr. Gotelee.—A copy of the fourth report of the South-west Middlesex Agricultural Society.

Mr. Taylor.—Specimens of the plant, seed, oil, &c., of the "Gold of pleasure" Flax, with samples of the oil-cake made from the oil, and consolidated by hydraulic pressure.

Mr. Fleetwood.—Specimens of the oil, seeds, &c., of the Sunflower.

Statistical Society.—Copies of their printed Journal.

Geological Society.—Copies of their proceedings.

Mr. W. Miles, M.P.—Specimens of trial wheats.

Mr. Reeves.—Specimens of Burwell wheat.

Mr. Matson.— Specimens of Van Dieman's Land wheat.

New York Institute.—A plough for hill-side ploughing, and copies of their printed proceedings.

Martin Doyle.—Copies of the new parts of his Cyclopædia of Husbandry.

Society of Arts.—A copy of the last part of their Transactions.

Mr. Youatt.—Copies of his Veterinarian.

Mr. Ferguson.—A copy of his work on Distemper among Cattle.

Mr. Stephens.—A copy of the last number of the Quarterly Journal of Agriculture, and of his Book of the Farm.

Mr. Peacey.—A copy of the report of the Winchcombe Agricultural Association.

Northumberland Cottage Improvement Society.—A copy of the report of the Committee.

Mr. Grey (*of Dilston*).—Specimens of Cheviot Wool.

Mr. Bicheno.—A communication of the offer of his services, on being appointed by the Government to the office of Colonial Secretary of Van Dieman's Land, in promoting to the utmost of public and private opportunities the interests of the Society in the Southern Hemisphere.

These communications were received with the best thanks of the Council. The Council then adjourned.

At a Council held on Wednesday, the 9th of November, present, Thomas Raymond Barker, Esq., in the chair, Marquis of Downshire, French Burke, Esq., F. C. Cherry, Esq., James Dean, Esq., and William Shaw, Esq.—

The Earl of Hardwicke, President, addressed to the Council a letter on the subject of the arrangements to be made for the Society's Annual Country Meeting, to be held at Derby in July next; and Mr. Charles Stokes, of Kingston, expressed his willingness, as residing within a stage of that town, to promote the business of the Meeting, as a Member of the Council, to the utmost extent of his opportunities.

W. W. Bulpett, Esq., Mayor of Winchester, addressed a letter to the Council, in favour of that city as the place of the Society's Annual Country Meeting of 1844.

Dr. Playfair having replied favourably to the request of the Council that he would give a Lecture to the Members of the Society on one of the evenings during the week of the ensuing general December Meeting, the Council decided that the Lecture should be delivered at the Society's House, in Hanover Square, on Wednesday, the 7th of December, at eight o'clock in the evening.

Mr. Pusey, M.P., communicated a report from Professor Henslow on the subject of his arrangement of the Society's specimens of wheat for permanent suspension in glass-cases at the rooms of the Society, and of his recommendations for their final completion, which the Council adopted with their best thanks.

Mr. Dean presented a further report from the House Committee, which was unanimously recommended to the next monthly Council for adoption.

Criteria of Breed in Prize Animals.

Mr. George Drake, of Manor Farm, East Tytherley, near Stockbridge, Hampshire, communicated to the Society the following remarks on the points of distinction in deciding on the peculiarities of breed in animals exhibited in competition for prizes:—

"By reference to the Prize-List of the Royal Agricultural Society of England, it is clearly manifest that the Society considers the improvement of distinct breeds of Cattle and Sheep their paramount object. And to further this laudable attainment, it appears necessary that the distinguishing characteristics by which they are recognized should be more generally circulated, and more clearly understood; especially as many eminent breeders and judges in the principal localities where they are bred and matured entertain conflicting opinions on the subject. For instance: in Herefordshire, we find advocates for the pure white-faced cattle, who attribute the mottled face, so prevalent in that breed at the present time, to a cross; while others deny it. And the instances of the variable colour of the short-horns have been said to be departures from the original stock, and we often find an unwillingness on the part of many breeders of Sussex cattle to admit that they are indebted to Devonshire for any improvement in their breed, while others believe them to be closely allied. If we extend also our researches to the breeds of sheep, we shall discover the same ambiguity prevailing with regard to their purity. How frequently has the beautiful and complete Leicester been made serviceable to the improvement of other breeds; and is it not probable that some of those of increased size and superior quality are of doubtful pedigree, notwithstanding they are represented and exhibited as of pure extraction? And what a motley appearance does the Southdowns in some of our large fairs present, especially in the West of England, scarcely two pens having any close resemblance to each other, and comparatively a few that discover any family distinction; and yet the owners represent them as pure Downs, by rams from a celebrated flock, notwithstanding the characteristics of the breed are wanting; which evidently shows, that if the sire was well bred the ewes were not. How does large size prevail on many to introduce them into well bred flocks, and the imagined benefit has proved an irreparable injury, especially when they are turned promiscuously with the flock, it being impossible to select the produce with that certainty which would satisfy a careful breeder; hence the loss of that beautiful character in the appearance so generally wanting; and I am strongly inclined to believe, that prizes have been awarded by the Society to animals not entirely free from this objection, or at least that did not seem to be so. I would humbly call the Society's particular attention to the subject, in order that pure breeds alone may be encouraged, and all mongrels really be prohibited, as intended, from competing for the Society's premiums. In order to accomplish this, I would with deference recommend the Society to establish a Committee of competent individuals to erect a standard of character for every class of cattle and sheep which they intend to encourage; and it should be the first work of the Judges, when they enter the yard, to exclude all animals that do not show the breed intended. This I believe would prove a check to the changes which fashion is continually making to the extinction of pure breeds. The next thing I would suggest is a standard of form, and every point necessary to constitute a perfect animal, noticed according to its importance, and have its proper influence in the decision of the Judges. By such fixed rules the public would become better acquainted with the pure breed and proper form both of cattle and sheep, and be better qualified to form an accurate opinion on what animals to exhibit. Now, the breeder is guided exclusively by his own or his friends' ideas, which will very probably differ materially from the Judges; and points which influence the decision of the Judges last year may not have equal weight with those for the next. For it is evident, that those who pass for excellent judges of the select, breed and exhibit animals of little similitude. We find most have their own standard of perfection, although few are exactly alike, and many are led by the fashionable opinion, which is ever changing, and hindering the progress that should be made in the improvement of pure and perfect animals: this, I think, would in a great measure, if not entirely, be counteracted by the means already proposed. I would also mention the necessity of confining prize animals to a system of feeding; for how frequently, after the natural appetite is appeased, are they literally crammed with stimulating drugs, to increase the desire for food, with which they are most extravagantly supplied; by which means many defects are concealed, and the natural size, form, and fattening properties unfairly represented."

Prizes for Sheep.

Mr. E. E. Dawson, of Ingthorpe, near Stamford, communicated through Mr. Dean his recommendation for the establishment of a new class of prizes for sheep, intermediate between those for the small sheep of Class 6 (Leicesters) and the large ones of Class 8 (Long-woolled Sheep not qualified to compete as Leicesters), and to be called the class of "Long-woolled Leicesters," or the "Tenants' Leicesters," or the "Improved Leicesters."

Lord Braybrooke called the attention of the Council to the new and economical oilcake manufactured in Norfolk, and expressed his intention of communicating to the Society the results of the experiments on this subject now in the course of trial.

The Hon. and Rev. W. Rous, President of the North Walsham Farmers' Club, also transmitted a statement, and Mr. Warnes a copy of his published pamphlet on the same subject.

The Rev. D. Gwilt, of Icklingham, near Mildenhall, Suffolk, communicated the results of his trial of the Siberian Vetch (which grew luxuriantly, but was refused as food by horse, colt, cow, and beast), and a notice of the occurrence of an injurious grass among his Lucerne.

Mr. Hobbs, of Belle-Vue, Kingsdown, Bristol, transmitted an account of his proposed method of destroying the fly which attacks the Hop-plant, and also of preserving the poles from decay.

Messrs. Hall and Chatterley, of Romford, announced their intention of communicating the results of fifty experiments on an extensive scale, they had in progress on manures during the past season.

Mr. Reeves, of Norwood, in Sussex, communicated the result of his experience in the growth of Burwell Wheat on variable soil.

Mr. Chadwick, Secretary to the Poor Law Commissioners, Mr. John Martin, R.A., and Mr. Prideaux, of Plymouth, called the attention of the Council to the importance of an agricultural application of the Sewerage of large towns.

Sir Charles Morgan, Bart., presented samples of wool from his black breed of Welsh Mountain Sheep (superior to the wool of the white), and from his Hampshire Southdown Rams; and Mr. Ormsby Gore, M.P., a ball of agglutinated hair, weighing 13 ounces, and taken from the stomach of a perfectly healthy calf, killed when only seven weeks old, at Porkington Park, Shropshire.

The Labourer's Friend Society presented their latest publications.

The Council then adjourned for a fortnight, to November the 23rd.

Dr. Playfair has expressed to the Council his willingness to extend his Lecture to be delivered to the members of the Society, on Wednesday, the 7th of December, on the subject of the "Application of the Principles of Physiology to the fattening of Cattle," to the following evening, if consistent with their arrangements during that period.

Dr. Playfair considers the subject as too extensive for a single Lecture, but thinks that in two Lectures the necessary information may be conveyed.

He proposes that the *first* Lecture should consist of an explanation of the general princples of Nutrition, and of the composition of the various kinds of food given to graminivorous animals; while the subject of the second Lecture would be the more immediate application of these principles to the rearing and feeding of Cattle, and to the explanation of the most important "fattening points" recognized by feeders or breeders of Cattle.

The Council stood adjourned to Wednesday, Nov. 23, but in consequence of the absence of Members from town, a sufficient number did not attend to form a quorum for business.

The next Monthly Council will be held on Wednesday, the 7th of December.

NEW MEMBERS.

The Earl of Beauchamp, of Portman-square, London, and Sir William Beauchamp, Proctor, Bart., of Lumley Park, near Norwich, were elected Governors.

The following gentlemen have been elected members of the Society during the month.

Aylmer, J. H., Walworth Castle, near Darlington
Æneas, William, Says, Tutshill, near Chepstow
Barker, John Henry, East Lodge, Bakewell, Derbyshire
Bagshawe, William John, Oaks, near Sheffield
Beard, Thomas, Stowe, near Buckingham
Beaumont, John Augustus, Westhill, near Wimbledon, Surrey
Billington, Leonard, Preston, Lancashire
Bridger, James, New Barton Farm, Winchester
Burr, Rev. H. S., Tiddenham Rectory, Chepstow, Monmouthshire
Chester, Thomas, Haven Farm, Tickhill, Yorkshire
Child, Robert B., Newton, Milford, Pembrokeshire
Coape, Capel, 9, York Place, Regent's Park, London
Cottingham, John C., Hardwick, Chesterfield, Derbyshire
Cooper, Thomas, Ashford, near Bakewell, Derbyshire
Creed, John, Ampney St. Mary, Ashbrook, Cirencester
Darke, Thomas, Launceston, Cornwall
Davis, Rev. S., The Grange, Swansea, South Wales
Dillwyn, J., Llewelyn, Pullengare, Swansea, S.W.
Dowle, John, Claypit, Chepstow, Monmouthshire
Dunn, Thomas, Richmond Hill, near Sheffield
Edwards, John, Mess Strange, near Shrewsbury
Fell, William, The Close, Lichfield, Staffs.
Fillingham, George, Syerston, Newark, Notts
Forester, Richard Forester, M.D., F.L.S., Derby
Garratt, John, jun., Faringdon House, Exeter
Gilpin, Major Richard, Hockliffe, Dunstable, Beds.
Hancock, Sir Samuel, Bart., Britwell House, Tetsworth, Oxon
Hart, Charles, Wantage, Berks
Harvey, H. Sutton, Lincoln
Hole, William, Clare House, Tiverton
Hulme, William, Pembroke
Ilbert, William Roope, Horswell House, Kingsbridge, Devon
Ince, Thomas, Mansfield, Notts.
Jessop, William, Butterley Hall, Alfreton, Derbyshire
Johnson, Joseph, Ravenswood, Duesbury, near Manchester
King, James, K., Stanton Park, near Leominster
Knight, Robert, St. John's Place, Winchester
Knight, Henry, St. John's Place, Winchester
Lawrence, Northmore, Launceston, Cornwall
Mabbett, John, Stinchcombe, Dursley, Gloucestershire
Marshall, G., Godalming, Surrey
Norton, William Fletcher N., Elton Hall, Bingham, Notts
Palmer, James, Weston, Newbury, Berks
Parrott, Jasper, Dundridge, Totness, Devon
Pennant, Hon. Colonel E. G. D., Penrhyn, Castle, Bangor, N.W.
Phipps, Christopher, River, near Dover
Portmore, Charles Broadhurst, Derby
Roberts, Charles, Barnstaple, Devon
Roberts, John, Borzele, Ticehurst, Sussex
Lucas, Edward, jun., Hill Top, Dronfield, Derbyshire
Luttrell, Rev. A. H. F., Vicar of Minehead, Somersetshire
Sawers, Dr. I., Hon. E.I.C. Service, Oriental Club, London
Shakespear, Thomas, Powick, near Worcester
Smith, Nathaniel, Horsham, Martley, Worcester
Smith, Charles, Fulbeck, near Grantham
Somerset, John, M.D., Lambourne, Newbury, Berks
Talbot, L., Ashill, Taunton, Somerset
Tindale, W., Wheatley, near Doncaster
Tonge, John, sen., Morance Court Farm, Chevening, Kent
Troughton, N., Swansea
Ward, Thomas Rawdon, Round Oak, Englefield Green, Egham, Surrey
Walton, Thomas, Albany House, Old Kent Road
Warner, George, Priory, Hornsey, Middlesex
Wayte, William, Basford, near Nottingham
Wharton, Francis, Hatfield, near Doncaster
Williams, F. E., Doddenham, Worcestershire
Wilson, Thomas, Shotley Hall, Northumberland
Worthington, Thos., Hartshorne, Ashby-de-la-Zouch
Wright, Francis, Lenton Hall, near Nottingham

PROBUS FARMER'S CLUB.

At the last meeting of the members of this club, a very interesting paper was read on the improvement of waste land in this county, in which the author plainly showed the method by which a large proportion of our wastes might be reclaimed, and yield a profit to the land-holder, and a considerable increase of the acreable produce to the population.

"It is impossible to look at the vast quantity of waste lands," he said, "without lamenting the little attention that has been paid to the improvement of them." He considered that there were nearly 200,000 acres—more than a fourth of the whole county, which is now little else than miry bog and common, and which by a proper outlay would yield a very handsome per centage to the owners. After describing the wastes laying on the granite and killas, he entered at great length into the means of effecting this improvement; and to prove that the plan was feasible he gave the result of a piece of waste which was reclaimed under his own inspection. The land was about two acres, and after being sufficiently drained, was spaded and burnt, and manured with 200 bushels of lime and 24 cart-loads of sea sand. It then received two ploughings, and having got into a good tilth was sown to pasture turnips. The crop was a good one, which was carted off in the latter part of October, when the soil was ridged up and sown with winter vetches. This crop also was exceedingly good, and when cleared off the following spring, was manured with 30 cart-loads of farm dung to the acre, and again sown to pasture turnips. The crop was, if anything, superior to the first. This was also carted off in October, the land ridged up, and suffered to lie fallow during the winter. In the following spring, it was got into a good pulverized state, and one-half planted to flatpole cabbages, and the other to mangel wurzel. Both crops were very superior. In November they were cleared off the land, which was again sown to winter vetches. The crop was also an excellent one. It was taken away in the spring, and the land allowed a summer's fallow. In the beginning of August it was well worked down, manured with 200 bushels of lime, then ploughed with a double plough, and afterwards with a subsoil plough, and then harrowed and rolled, and having been got into good condition, sown with seeds for permanent pasture in the middle of August.

The expense of draining, labour, and manuring, during the three years, was as follows:—

	£	s.	d.
Draining 78 yards, at 2s. per yard......	7	16	0
Quarrying 78 loads of stone, at 5s. per load..............................	1	12	6
Carting 78 loads of ditto, at 8d. per load	2	12	0
Spading 2 acres, at 3d. per yard........	4	0	0
Burning and spading ashes............	0	14	0
Levelling the ground	1	0	0
400 bushels of lime, at 55s.............	11	0	0
Carting ditto........................	2	0	0
2 barge loads of sea-sand	1	14	0
Carting ditto........................	1	4	0
60 loads of farm-yard dung, at 1s. 6d. ..	4	10	0
Ploughing 8 times, at 6s. per acre	4	16	0
Subsoil ploughing, at 10s. per acre	1	0	0
Harrowing, rolling, and tormenting	3	0	0
1 man 4 days spreading dressing	0	6	0
4 bushels vetches, at 24s...............	4	16	0
4 quarts of turnip-seeds, at 1s. 6d.	0	6	0
Mangel wurzel and cabbage plants......	0	10	0
Seeds for permanent pasture	4	0	0
Total extreme......	£56	16	6

The produce for three years is as follows:—

2 crops of pasture turnips, at 8*l*. per acre	£32	0	0
2 crops of vetches, at 1s. per yard	32	0	0
1 acre of cabbages	10	0	0
1 ditto of mangel wurzel	8	0	0
Total produce	82	0	0
Total expenses......	56	16	6
Profit	£25	3	6

This is a clear profit of 25*l*. 3s. 6d. in three years from two acres of land, which in its present state would readily let for 3*l*. per acre. Here is not only a balance in favour of the improvement of 25*l*. 3s. 6d., but an income of 6*l*. per year. Now it must be admitted that almost in every parish in the county we may see large tracts of fine land (enclosed), but destroyed by wet, and upon which there are no symptoms of improvement. Enquire of the farmers why they are not improving. One will tell you, I know it would pay to drain, but my *lease is nearly expired.* Another, that he has not sufficient capital. A third, that the expense is too great for a tenant; but these various answers all tend to prove that the chief cause of improvements not being general is the *want of co-operation* between landlord and tenant. Were the farmer always a party, neither the duration of leases nor the expense would in general have the slightest effect. Improvement would proceed with equal rapidity at the termination as at the commencement of leases; and the execution of the work would always be of the most efficient kind. Now, this want of co-operation may frequently be traced to the difficulty of fixing the share each ought to bear of the expense. Both parties are probably disposed to take rather a partial view of the relation in which they stand towards each other, and to overlook this important fact, that in almost all improvements their interests are inseparably united, and that the greatest benefit can result only from the parties uniting and each bearing a share of the expenses proportionate to their interest in the concern. A very interesting discussion ensued at the termination of the lecture, and it was considered that the subject was one that was well worthy the consideration of every farmer's club in the county.

THE FARMER.

No. 12.

RECAPITULATION.

We are drawing to the close of the year, *December*; and, as it is the custom of many persons to take a retrospective view of their past transactions and habits of life at this season, we hope no one will feel displeased at our following the good old custom in reviewing our labours in the cause of agriculture, as they appeared in each month in our magazine during the year; thus reminding the industrious farmer of his periodical employments.

Winter again is come, and the indispensable necessity of renovating the ground by a good layer of manure, claims particular attention; the excellent crops of hay and corn, and the fine harvest with which we were blessed this year, should stimulate our grateful exertions to replenish the exhausted soil; for the old adage that "the soil is honest," is very true, for as you give so you shall receive. If you cultivate and manure your ground well, you are sure of having good crops in return; but if, through negligence, your ground becomes what is generally termed "hungry soil," you cannot expect any thing but poor crops and lean cattle. Let not the improvidence and laziness of some farmers be any cause for your following their baneful practice, but let your persevering industry and knowledge be an example to all your neighbours; study well the advice given in the papers on manure, No. 1 and 2 in *January* and *February;* there you will find sound practical information how to obtain manure, and how to make use of it to the best advantage. This is the season to commence operations in collecting the manure that is to be carted in the frost. It will be too late to begin when the frost has set in, and if the frost should be of short continuance, you lose the opportunity of manuring your soft ground, particularly the hay ground, very probably during the winter, and thus a whole year is lost through inattention.

Some of the preparatory work of hedging and ditching, given in the number for *March*, may be commenced before that month arrives, and the grubbing up of furze or brushwood that may be growing in the fields on spots of ground intended for peating (see the *April* number) may be judicious employment in cold weather; the wood will be serviceable for firing, and it will facilitate the work in more genial weather.

Those who do not employ a scientific drainer, will do well by observing the fall of water during the rainy season, as thereby they will be enabled to find out the proper direction of cutting the drains, and particularly the main drains, and the ditches, so as to have a regular fall for the water. Some useful instructions with plans of drains, are given in the *May* number, and that for *June* contains directions for draining hilly bogs, &c. A few days' labour on the hills in the winter judiciously applied, may secure acres of good grass in the spring, and thus form sufficient food for the sheep in the lambing season.

Hay-making in *July*, and corn harvesting in *August*, have been noticed in their respective months; and if the practical hints there offered have been duly attended to, they may be expected to produce satisfactory results.

The article in *September* (on sowing wheat) should not be forgotten, for the farmer's care does not cease at the sowing of the grain; his attention must be continued. If after heavy rain the water is allowed to lodge upon the surface of the ground, it chills the young plants, and thereby checks their growth, and too often rots a great portion of the seed, and the farmer, when too late to remedy the evil, finds to his cost a very light crop, and that in a great measure owing to the bad management in not letting off the redundant water, by opening the ream or open furrow made by the plough, as directed after the corn is sowed, a work easily done with the spade.

Potatoes stored and preserved as recommended in *October*, will ensure many a comfortable meal in the cold weather, and enable the careful farmer to supply the neighbouring market during the winter, and good sound seed for the spring planting.

As so much pains had been taken in recommending the best method of procuring and preserving good wholesome food for man, man's greatest slave, the horse, was not deemed unworthy of notice; so useful and faithful an animal well deserves attention: no animal contributes so much to our pleasures and comforts as the horse. Last month *(November)*, some hints were offered as to the best mode of treating and feeding horses, more particularly those employed in agricultural labour; and as the hints were intended and addressed to *farmers*, some directions about the feeding and management of horned cattle were added, in hopes they may be found beneficial.

Having thus fulfilled the engagement of giving an article on subjects connected with agriculture for each month in the year, adapting the subject to the season, it is hoped the selection may be useful, and the mode of treating them satisfactory. They were drawn up in a plain simple manner, being chiefly intended for the perusal of those farmers whose general knowledge does not aspire to the extensive fields of science. **Delta.**

Dec., 1842.

ON THE ESTABLISHMENT OF A FARMERS' CLUB HOUSE.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—I am pleased to find that the project of establishing a club house in London for farmers is again revived, and I trust that the meetings to be held on the subject in the Cattle Show week will be well attended, and that immediate steps will be taken to carry the plan into effect.

All my brother farmers to whom I have mentioned it, and whose business ever calls them to town, approve highly of the suggestion; and there can be no doubt of its being well supported, provided the plan of its establishment and the regulations for its future management be judicious. As business in London closes at an early hour, all farmers must, after it is over, have experienced the want of society with tastes and ideas congenial to their own. To go to bed at country time is useless, for "early to bed" implies "early to rise"; a practice out of the question in town, excepting on a Smithfield market morning; for London before business commences—before the accumulation of yesterday's dirt, whether within or without doors, is removed—is unendurable.

Newspapers (except it be the day on which the agricultural papers are issued) have no great charms for farmers; unless, therefore, one is fortunate enough to share his box in the coffee-room with a chatty neighbour, the theatre or some other place of amusement and expense is the only resource.

How rarely, too, will conversation with a stranger —whose ideas, perhaps, differ from your own on all subjects but that interminable one, *the weather* —have sufficient interest to check the wish for more exciting occupation.

Thousands can, no doubt, testify that the want of congenial society at their hotels during the long winter evenings, at which season farmers are more frequently in London, has driven them to expences they could ill afford, and which have been the sources of much future regret.

How different the case when, after the business of the day is over, you are sure of passing the evening with many whose occupation is similar to your own, and from whom you are certain of obtaining information. Such meetings will be literally those of a great "Farmers' Club," not for comparing the different practices of the same neighbourhood, but of districts far removed from each other; where, indeed, the improvements of the north, or of the east, may quickly be carried to the south or to the west.

What opportunity also, as you justly observed in last week's *Express*, will such a club-room give of becoming personally acquainted with those of whom you only know by correspondence. It is, indeed, far from impossible that two persons thus situated may now spend an evening together in the same coffee-room without being aware of each other's presence; which, I imagine, under the arrangements of a club-room, could never occur.

For myself, I can state that, as secretary of a farmers' club, I have had, and continue to have, much friendly correspondence with gentlemen whom I have never had the pleasure of meeting; and some of whom, doubtless, have frequently been in town at the same time as I have.

Many other arguments in favour of a farmers' club house might be urged; and I trust, therefore, that what is so desirable will be speedily accomplished. I am, Sir, your obedient servant,

RUSTICUS.

AN ACCOUNT OF THE DUTY ON HOPS OF THE GROWTH OF THE YEAR 1842.

DISTINGUISHING THE DISTRICTS, AND THE OLD FROM THE NEW DUTY.

Districts.	Duty.			
Barnstaple	£14	0	8¼	
Bedford	113	14	3½	
Cambridge	6	5	3½	
Canterbury	58,287	18	8	
Chester	1	3	9½	
Cornwall	7	5	9¼	
Derby	508	18	4	
Dorset	14	12	11¼	
Essex	1,297	12	10	
Exeter	1	0	3½	
Gloucester	9	5	1½	
Grantham	91	7	4	
Hants	11,546	10	6¾	
Hereford	27,310	7	0½	
Hertford	929	18	3½	
Isle of Wight	9,675	1	9¾	
Lincoln	2,548	2	4	
Lynn	43	5	8½	
Northampton	3	17	0	
Norwich	7	6	7¾	
Oxford	77	15	9	
Reading	29	9	0¼	
Rochester	107,395	19	0	
Salisbury	70	10	8	
Salop		18	0¼	
Stourbridge	1,926	6	6½	
Suffolk	1,511	9	3¼	
Surrey	34	10	2¼	
Sussex	79,546	17	5½	
Wales, Middle	32	16	8½	
Wellington	48	4	11¼	
Worcester	6,932	16	6¾	
	310,025	8	10¾	
Old duty at 1 12-20d. per lb.,	169,776	6	0¼	12-20
New duty at ¾ 8-20d. per lb.,	125,486	16	7½	8-20
Additional duty of 5 per cent. per 3rd Vic., c. 17,	14,762	6	2¾	
	£310,025	8	10⅜	

G. HOTHELL, Accountant-General.

Excise-office, London, Nov. 22, 1842.

RETURN OF THE NUMBER OF SHEEP AND HORNED CATTLE SOLD AND UNSOLD AT THE GREAT OCTOBER FAIRS OF DUNLO, OR BALLINASLOE, FROM THE YEAR 1790 TO THE YEAR 1842.

	SHEEP.	HORNED CATTLE.
Years.	Total Sold and unsold.	Total Sold and unsold.
1790	61,931	8,632
1791	67,227	8,162
1792	68,031	7,529
1793	68,384	7,816
1794	67,475	7,337
1795	68,247	7,996
1796	70,551	6,289
1797	71,248	6,200
1798	74,151	7,631
1799	77,937	9,957
1800	70,386	7,749
1801	79,252	9,743
1802	84,498	9,744
1803	87,682	6,664
1804	87,464	8,801
1805	84,354	10,104
1806	87,393	12,190
1807	80,962	8,568
1808	82,799	9,327
1809	76,948	8,457
1810	91,001	7,258
1811	86,489	7,462
1812	83,529	9,983
1813	77,088	9,268
1814	80,280	9,611
1815	94,764	8,149
1816	78,553	8,183
1817	70,399	6,802
1818	70,877	9,610
1819	78,222	9,738
1820	80,776	8,505
1821	83,400	7,284
1822	90,177	9,017
1823	95,999	10,909
1824	84,234	10,505
1825	90,265	10,266
1826	94,405	8,240
1827	91,375	8,349
1828	97,384	11,513
1829	86,119	9,343
1830	81,556	7,276
1831	62,176	7,269
1832	63,054	8,128
1833	56,412	8,761
1834	66,714	9,637
1835	62,431	8.584
1836	63,638	9,483
1837	69,336	9,137
1838	92,269	14,143
1839	96,231	11,750
1840	91,282	12,208
1841	77,189	13,164
1842	76,815	14,364

EXTRAORDINARY PRODUCE OF WHEAT.—Mr. Joseph Clark, of Kintbury Holt farm, near Newbury, four years ago, received a basket of fish from a friend, and on unpacking it, found in the straw a few corns, which Mr. Clark planted in his garden, and out of which only one grew. The produce from the one corn the next harvest was 1,402 corns; Mr. C. still continued planting the seed, and this Michaelmas has sown several acres in his field, and what makes it still more extraordinary, he had a second crop from the old stub. Mr. Clark has named it the Fish Drop.—*Reading Mercury.*

AGRICULTURAL QUERIES.

DRAINING AND SUBSOILING.

Sir,—Mr. Smith, of Deanston, is made to say, in his lecture on draining, that the use of the subsoil plough, without previous draining, is hurtful rather than beneficial.

This is a very startling doctrine, provided it is the rule without the exception, and I beg to ask, through the medium of your Magazine, whether in sandy or gravelly soils, through which the water percolates freely, a portion of the subsoil may not be brought into activity without the expense of draining? Or whether there may not be certain qualities of soil, upon which draining might operate so slightly as to make the return not worth the expense?

I am, Sir, your obedient servant,
York, Nov. 24, 1842. Economist.

ANALYSIS OF SOILS.

Sir,—I should feel obliged by any of your scientific correspondents informing me how the analyzation of soils may be the most easily accomplished without the assistance of a professional chemist, as I do not find in any of the new works on agricultural chemistry a detailed account of the performance of it.

Yours, &c., &c.,
A Youthful Agriculturist.

[The most simple directions are those given by Sir Humphrey Davy in his "Elements of Agricultural Chemistry," and by the Rev. W. L. Rham, in the first vol. of the Journal of the Royal English Agricultural Society, p. 46.—Ed.]

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—May I ask, through the medium of your excellent paper, to what weight the white Silesian beet-root usually runs. An average specimen, grown on a poor chalk soil in this neighbourhood, weighs, with the greens, 17½lbs.

I am, sir, your obliged servant,
Salisbury, Nov. 1. Chas. Squarey.

Sir,—In a supplement to your paper of the 11th of April last, your correspondent, "W. M.," who dates from Stirling, N.B., details an experiment he made last autumn in sowing wheat in the furrow, by a drill attached to his common plough—a plan which I think is likely to answer. Will your correspondent have the kindness to favour your numerous readers with the result of the crop at harvest; and whether he found much benefit to result from it, as compared with the broadcast method.

I remain, sir, your obedient servant,
An old Northumbrian Farmer.
Glendall, Nov. 1.

Sir,—In your paper of the 24th inst., there is a very interesting article on the cultivation of turnips, by Mr. Scougall, of East Lothian; and it would be still more useful if he would answer the following queries, through your columns also, viz.—

Was there anything done in spring to the drills which were prepared in autumn, previous to putting the sowing machine along? Did the spring-prepared portion not get a ploughing till spring; and were the drills on it made up immediately before sowing?

What kind of manure was used, what state was it in when applied, and at what rate per acre?

Was it merely the bulbs of the turnips that were weighed? What kind of crop was taken from the ground in the former season, and when did it last get manure previous to preparing for turnips? What width of drills, and distance betwixt the plants, does Mr. Scougall in general prefer?

I am, sir, your most obedient servant,
Oct. 31. A North-country Farmer.

CALENDAR OF HORTICULTURE FOR DECEMBER.

At the end of the second week of November the ground became saturated with water, after a season of peculiar drought. The autumn has upon the whole been cool, and one or two temporary frosts were severe; yet, with so great a prevalence of sun to November 8th, the ground must have been warm; and, therefore, when the rains fell in profuse quantity upon it, a volume of watery vapour must have flowed into the atmosphere. Our remark goes to prove that, although the characters of the two autumns of 1841 and 1842 are strikingly contrasted, yet the danger to which plants in pits and greenhouses are exposed at the torpid season of early winter is perhaps increased by a sudden transition from aridity to redundant moisture.

As a singular fact, it is worthy of notice, that the dust was deep in the high roads till the afternoon of November 9th, and was driven about by wind just as in summer to within six hours of the time when it was reduced to mud by the copious rain which then commenced. In the gardens, every species of labour could be performed with facility, and thus one of the finest crops of potatoes on record was secured without difficulty, and so clean as greatly to aid its safety during the winter.

After stating these circumstances, we are naturally led to those remarks which the season immediately calls for.

Plants in cold frames are those which—like the carnation, pink, penstemon, primula of the common kinds, auriculas, calceolaria, among the herbaceous tribe—require simple defence from frost and rain. Sunk pits well glazed, and double turfed around the parts which are raised above the ground-level, are the most secure from frost, but they are very objectionable if the site be naturally damp. In that case brick erections, every part of which is above surface, are preferable; but the walls should be protected by a coating of dry straw or fern, pressed firmly, and kept in its place by stakes, or the like, to the level of the frame.

In these pits roses, deciduous azaleas in pots, and indeed all the potted hard-wooded shrubs, can be effectually preserved; but in all cases a quantity of dry saw-dust, sufficient to admit the pot to its rim, is a defence that ought to be adopted; even geraniums can be therewith kept throughout a hard winter without danger of freezing at the roots; but these succulents should never be associated with other shrubs of fibrous, woody, structure.

Greenhouse plants are of various characters, and require very different treatment. The heath-tribe, or ericaceæ, contains plants which ought to have a house devoted exclusively to themselves. Mr. M'Nab, the greatest authority to which we can refer, observes, with respect to the winter treatment of heaths, that they will bear several degrees of frost without injury; but that if they be so exposed, the utmost precaution must be observed not to thaw them by fire heat. Abundance of air, a quantity of water sufficient to keep the soil just moist, and such coverings of canvas, mats, or boards, as will resist night frosts, offer the best security. The epacus, acácia, armata, borónia, hóvea, some of the best Elicrysums, and most other of the small leaved, hard-wooded shrubs which require sandy moor soil, may be safely associated together.

Caméllia, azálea indica, rhododéndron, pitós perum, eugénia, myrtles, the hardy and semi-hardy evergreens, in pots, grow well together; they require a gentle state of moisture in the soil, a free and dry air. Water ought to be given only when the surface has been dried by two or three sunny days. Caméllia blooms are forward, and when they expand, and the plants are brought into the dwelling-house, a little more water may be safely given.

All the plants with succulent stems must be in a separate house, for their habits are totally distinct from the others alluded to above. Geraniums for instance, transpire freely, and we see reason to believe that to the copious emission of gaseous vapour that heaths and similar plants are injured when persons affect an indiscriminate collection. Little water, plenty of dry air, and during sunny intervals, but not later than 2 o'clock, and fire-heat if the open air be frosty, are the conditions of security. Calceolárias, verbénas, cyclamens, and some bulbous plants can flourish with geraniums; but here, as also in the warmer pits designed for forcing roses, the gardener must sedulously observe the earliest appearance of the green fly (aphis), or otherwise the texture of the tender shoots, and all the beauty of the leaves (so charming in a well-grown rose tree) will be affected in a few hours.

The plant stove ought never to have its temperature by night reduced below 50°, 55° would be better, and by day 60°, or a higher degree by sun. As to water, a dryish soil is safer, for we would not promote growth. Fumigation will, now and then, be beneficial, because the aphis attacks certain plants. Air may be occasionally admitted; but it should be recollected that when the temperature of a house is exalted 15° or 20° above that of the atmosphere, the air will permeate through every crack or lap of the glasses, and thus there must be a perpetual interchange.

Gloxinias and gesnuas, if now introduced, after having become torpid in some cool and darker situation, will gradually become active; and then, but not before, should be very gently watered. Gloxinia seeds now sown upon a surface of finely sifted heath-soil, and just pressed in by a flat piece of wood, will germinate early in the ensuing year; some varieties may thus be obtained.

The pine stove of fruiting plants generally is kept at very low temperature by some extensive growers, and the soil perfectly dry. These conditions insure a check, which in very large full grown plants is of no consequence, or rather it is desirable, as by diverting the juices of the plant, and rendering torpid the entire system of roots, it throws the centre into bloom. About the third week, or at Christmas, these wholesale growers give each pot a complete drenching of water, at the temperature of the house, and immediately raise the heat by fire to above 70°; new roots are developed, and the plants rapidly show the crown of the future pine in the heart of the inner leaves.

The succession, as we have often stated, and now re-urge, must be kept growing at a moist, vaporous, dung-heat, of 65° to 70°—sustained, if needful, by hot water pipes.

The early vinery, after having been exposed for a few weeks to the weather, subsequent to the final pruning, spurring, and cutting-back, should be excited at any accustomed periods, from the first days to the fourth week of the month. A precise education of a vine is of more moment than unreflecting persons would imagine. It is perfectly certain that buds will enlarge, almost to a day, after two or three forcings, at fixed periods; hence it is bad practice to force two or more houses alternately. It is also best to begin with decision: thus, supposing the 15th of December to be the time, on that day the temperature may be raised to 60° at once, and kept at that degree for a week; then 65° by night, and 70° by day, should be the lowest, till the blossoms appear, when 75° may be the maximum.

There exists much difference of opinion respecting the degree of moisture to be maintained in a vinery. Some, with Mr. Williams, of Pitmaston, are averse from it; others stoutly contend for the necessity of an atmosphere saturated with vapour. The latter condition is destructive of the vine *acarus* (erroneously called red-spider), and it favours the elongation of the advancing footstalks of the clusters before the blossoms expand. This "drawing out," as gardeners call it, produces light graceful branches, which can be thinned with facility; but the fruit, in point of flavour, assuredly acquires nothing by moisture. The object therefore of each individual grower must be duly attended to.

For the open garden little can be directed with certainty: protective measures must be taken as the weather shall indicate; and if the ground be open all the vacant spaced can be either trenched or roughly digged.

Masses of leaves (not evergreen) can be raked from the fields and lawns, and these, being mixed with some of the loose grass, heat more freely than others collected in woods or groves. As this is a season for applying heat to a succession bed, or row of sea-kale, the leaves might be advantageously used at once round the troughs or pots, and thus effect a double object. Beech leaves ferment slowly, and frequently never yield much heat. Oak leaves are superior, but none excel the leaves of elm or birch collected in the park. We once were told by a Scotch gardener of eminence, who had worked under the noted Henderson, that people were employed to thresh the oak trees just before their fall, and with these the pine pits were filled. This material was found to be not only most efficient, but so durable, that by turning, and a very small addition, they retained their heating power during two years. This accords precisely with the opinion of Speechly, who used leaves during 25 years, at Welbeck, and asserted their superiority and durability, particularly those of the oak.

Fruit does not keep well this year; locally, however, this is certain; therefore it will be expedient to look over the stores, and remove every decaying, or specky apple. Pears go off at the core, and many a fine-looking fruit is thoroughly decomposed within. The moisture of the season could not have produced this tendency to decay, for a dryer autumn up to the 10th November, could not be desired. Our knowledge of cause and effect in the phenomena of meteorology, is very limited.

November 20th.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR NOVEMBER.

The month just concluded has proved, as regards its atmospheric attributes, undeniably favourable to farming operations. From the commencement until quite the 25th, scarcely a single day's interruption was experienced in the prosecution of out-door labours, and it affords us unspeakable pleasure in being enabled to intimate that that highly important operation, wheat sowing, was brought to a general conclusion in England about the 20th, under the most cheering auspices, thus giving earnest of a good yield in the forthcoming season. Our correspondents in most parts of the country represent the young wheat plants as exhibiting a very strong and healthy appearance; and, though much rain has lately fallen, scarcely a single instance has occurred in which "winter pride" has been complained of.

The intention of government to allow American flour, which may henceforth arrive in this country, by way of our colonies in North America, to be imported at the same amount of duty as Canadian, has justly called forth the utmost astonishment of our agriculturists. That this is a measure fraught with great injustice to them we are well assured. Our executive in North America, have, it appears, agreed to levy a fixed impost of only 3s. per barrel upon flour that may hereafter be received from the United States, which flour may be sent to any of the ports in the country, and pay, as the case may be, from 1s. to 3s. per barrel more, the latter being the maximum, making a total utmost rate of duty of only 6s. per barrel. The sum now levied upon flour imported direct from New York, or any other part of the States, is 10s. 10d. per barrel; hence, it will be seen the Americans will be gainers of a drawback by this dangerous plan of quite 4s. per barrel, and be enabled to supply us at almost any period. This is a question in which not only our farmers, but also millers are interested, and we trust that such steps will be speedily taken by them to have their wrongs redressed.

The flail and thrashing machine have been, as is almost invariably the case at this season, in active operation, and some very large quantities of grain have been prepared for the different markets; yet we find the receipts direct from the growers have not proved so large as might be expected. However, they have been by far more than adequate to meet the wants of the dealers; and, as a consequence, the prices of wheat have suffered an abatement of from 1s. to 2s. per qr. In the early part of the month there was some speculative inquiry for both free and bonded wheats, and the quotations had an upward tendency; but that inquiry has fallen off, and with it lower figures. The arrivals of barley having been large, that article has met a dull sale, and the same amount of depression as above. Malt, both old and new, has sold slowly, while the value of most other grain has ruled low.

The supply of food in our grazing districts has been tolerably extensive; yet, compared with that of last year, it has exhibited a falling off. In some quarters several severe losses have been sustained by our graziers by the prevailing epidemic; yet, on the whole, its virulence has subsided. The turnip crop, owing to the dry weather during the months of August and September, has not, we regret to say, come up to the expectations of the growers.

In Scotland the seeding of the winter wheat has been generally completed, with the land in fine condition for the reception of the seed furrow. In some of the markets in that portion of the United Kingdom, holders of the best heavy wheats have demanded full prices; but all other kinds of grain have hung heavily on hand, and been purchased on easier terms. Our accounts agree in stating that this year's produce of most kinds of the soil's productions is good.

Our Irish letters state that the heaviness in the demand here for grain has had considerable effect upon the markets; the consequence has been that many farmers have withheld their intended supplies, yet the prices have continued to fall.

The working of the new tariff, as might very naturally be expected, has been again productive of much anxiety amongst those immediately interested. In London, as well as the various outports, the imports of stock under this baneful measure from Germany, Holland, and Spain have been large, but of very inferior quality. It is true, some superior beasts have come to hand, but the losses incurred upon them by the importers have, we hear, been heavy. By private letters from Spain we are given to understand that some beasts were sold as low as from 3*l*. to 4*l*. per head in the beginning of the month; but that considerably higher rates have been lately demanded by the owners. The expenses which have been paid for their transmission to England, have been about 7*l*. 10s. each. The average weekly arrivals of each kind of stock from all parts has been about 250 head. Independently of these importations, the supplies o foreign game, poultry, &c. in the different marketf have been great indeed, which have produced unusual heaviness in the general inquiry, and with it, extremely low figures.

The following is our usual monthly statement of the supplies and prices of fat stock, exhibited and sold in Smithfield cattle market. The former have comprised 14,400 beasts, 112,212 sheep, 2,140 calves, and 3,049 pigs, while the latter have ranged as follows:—Beef, from 3s. to 4s. 4d.; mutton, 3s. to 4s. 4d.; veal, 3s. 6d. to 4s. 6d.; and pork, 3s. 8d. to 4s. 6d. per 8lbs. to sink the offals.

The bullock supplies have been mostly derived from our northern grazing districts, and a worse description we have seldom witnessed at this season. A great scarcity of really good sheep has been complained of; hence they have supported their previous value; but other qualities have been bought on easier terms. The sale for beef, veal, and pork has ruled dull, at low rates of currency.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, Nov. 29, 1841, and this day, Monday, Nov. 28, 1842.

At per 8lbs. to sink the offals.

	Nov. 29, 1841.						Nov. 28, 1842.				
	s.	d.		s.	d.		s.	d.		s.	d.
Coarse & inferior Beasts	3	0	to	3	4	..	2	10	to	3	0
Second quality do.	3	6		3	8	..	3	2		3	4
Prime large Oxen......	3	10		4	0	..	3	6		3	10
Prime Scots, &c.......	4	4		4	8	..	4	0		4	4
Coarse & inferior Sheep	3	4		3	6	..	3	0		3	2

	s.	d.	s.	d.	s.	d.	s.	d.
Second quality do.	3	8	3	10	3	4	3	6
Prime coarse woolled do.	4	0	4	2	3	8	4	0
Prime Southdown do..	4	6	4	10	4	2	4	4
Large coarse Calves ..	4	6	4	10	3	6	4	2
Prime small ditto	5	0	5	2	4	4	4	6
Large Hogs..........	4	8	5	0	3	10	4	4
Neat small Porkers ..	5	2	5	4	4	6	4	8

SUPPLIES.

	Nov. 29, 1841.	Nov. 28, 1842.
Beasts...	3,210	3,789
Sheep	24,219	24,810
Calves	130	108
Pigs	380	427

Up to Newgate and Leadenhall markets an immense supply of slaughtered meat has again come to hand from Scotland, Yorkshire, and other parts, which, together with that killed in the metropolis proving large, has caused the general inquiry to rule dull, and the rates have given way to some extent. The total arrivals have been about 11,900 carcasses, but they have been disposed of with great difficulty at miserably low figures.

ANOTHER REPORT.

We have now to notice, to the best of our ability, the condition of the crops at the close of the "gloomy" month of November; and this we shall do, as perfectly impartial observers, residing in the very focus of agriculture, yet ourselves partaking in the feeling of the "consumers."

Before offering any remark upon the weather, or its effects upon the labours of the farm, we must be permitted to appeal to the common sense of the readers of *The Mark Lane Express* on a few plain matters of fact, while we deprecate the delusive rhapsodies poured forth in letters to Sir R. Peel, and to the Editor, on the subjects of the Corn Laws and the Tariff; the only tendency of which must be to irritate and depress, at a time when the operations of both measures are too recent to be practically understood. Let any one attentively examine and reflect upon the items of the table of "comparative prices per cwt." in column 1, page 5, Nov. 21, and then, noting the quotations of red wheat in the years of 1834-5, to be 6s., and those of 1836 and 1838, just double, or 12s.; let him put the simple question, whether it be possible that the corn laws could have produced the difference of cent. per cent. in the short period of twelve months in the very same article. The law of 1829 was in activity at all the periods named; it remained uniformly the same in all its force and bearings; then how, by any possibility, could it have caused a difference so remarkable in the price of wheat? Every just and real rise or depression of price is dependent solely upon the *conditions of supply and demand!* Let us then cease to debate and wrangle, and task all our energies to increase the productions of the land. "*Hic labor, hoc opus est,*" and experience will demonstrate that we shall not labour in vain.

It is an object of no slight importance to prove the assertion; and this we shall attempt to do by referring to two letters, received from a person of veracity whom we have known upwards of 14 years. His power of observation we can trust, and his statement is founded upon experience. The passages selected are cited nearly *verbatim*, and the results detailed go far to verify all that Mr. Greig has written upon the prosperous position of Scottish agriculture in the Lothians.

That part of Wiltshire which lies between Malmsbury and Chippenham, is naturally poor; the land is cold and backward, the water being "near the surface," consequently, the average produce of wheat is not above four sacks on the acre. For some years past a gentleman has appropriated a piece of land, of the usual quality, for the benefit of the poor inhabitants of the parish of "Grittleton" to be cultivated wholly by the spade. "I am," (says our correspondent,) "in constant observation having let this land; and have known one piece of 20 perches produce seven bushels of wheat, or at the rate of 14 sacks per acre; other pieces of like extent, produced from 5 to 6 bushels." Per date Nov. 12th inst. he writes—"I have this morning been to Malmsbury. Among other gifts of the Saxon Athelstan to the inhabitants, was a piece of land, now dwindled to about 500 acres, shared among the inhabitants of the borough. This was an unproductive common, and the smaller shares sold at the annual price of 2s. 6d. for the run or feed of cows. It has been now some years enclosed, and separated into allotments, and the produce on the average is 14 sacks of wheat per acre; the man that used to take 2s. 6d. per year, now, by cultivation, obtains 7 sacks of wheat. Another piece of land here, belonging to the Earl of Radnor, was absolutely out of tillage, the farmer not getting much more than his seed. This also is now let in small allotments to the poor; and the produce is wonderful, above 12 sacks of wheat per acre."

Of two pieces, each of 20 perches, actually tilled by the writer himself in the present year for experiment, one produced 13 sacks of potatoes, and six bushels of barley were obtained from the other; this land lies in the parish of Hullavington.

Now, then, if good tillage can and does so increase the produce of land almost barren by nature, what shall be said of the generous, fine staple of the best farming districts?

The ground, till the late rains, was in capital condition for the plough, and amazing breadths of wheat were sown. Now it is very wet, but the rain was much required, for the wells, ponds, and water-courses were very low. Every prospect is beautiful and promising; and we trust that our next report will contain a picture strongly contrasted with that presented by the deluged fields and flooded vallies of the last winter.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

CHESTER CHEESE FAIR.—At our cheese fair on Wednesday last, about 400 tons were piled for sale. A large supply. It went off very flatly, and at least one-half was taken home unsold by the dairymen. The reduction in price from last fair was about 3s. on best cheese and 6s. on common. At that decline the markets are very heavy. Prices generally were from 45s. to 55s., and up to 65s. in a few instances. It becomes matter for serious consideration with both landlords and landholders where the depression will *rest*.—Such is the influx of cheap foreign provisions from the effect of the new tariff (and which will doubtless *continue* to operate, though with an increased consumption from an improved state of trade) that very moderate prices for all sorts of English provisions will doubtless be the result.

CHESTER CATTLE FAIR.—At this fair yesterday business was very flat. Barren beasts were dull of sale, the average price being about 7*l*. But few calves were shown, but they realised fair prices. Fat cattle were worth about 5d. to 5½d. per lb., and sink. The show of sheep was poor; wethers were worth about 5½d. Fat pigs sold for about 3¾d. The show of horses was indifferent, and business was very bad.

YORK FAIR, Nov. 23.—We have to report a fair supply of lean stock of all descriptions, and much the same prices were asked as at the late Soulmas fair; the demand corresponded with the supply. There were a few fat beasts shown, and they fetched from 5s. 6d. to 6s. per stone. There was a middling supply of horses, but they were generally of an inferior description, and not much business was passing amongst them.

BAWTRY FAIR.—There was a moderate supply of fat beasts, which sold at from 6s. to 6s. 6d. per stone. Lean stock scanty, but good fresh drapes realised good prices. In-calvers were in great demand. The supply of sheep was not large, and fetched from 5d. to 5½d. per lb., superior ones being in demand. The horses shown were of an inferior description, and prices were in accordance. Very little business was done in other things.

RIPON FAIR.—As this annual fair and statutes, there was a good attendance of agricultural servants of both sexes, but a depression was experienced, and those few who met with employers were obliged to submit to a considerable reduction from last year's wages. The show of cattle was not very extensive, though more than equal to the demand. Fat, 5s. to 5s. 9d. per stone. The sale of lean stock was very flat, and little business transacted; calving cows were much sought for, but at lower prices.

ILSLEY, Nov. 16.—The last fair for the season, called Hollantide Fair, was held this day. There was a moderate supply of sheep, and a tolerable sprinkle of purchasers present, but the trade was very dull. Ewes were sold generally from 22s. to 24s.; a few prime ones realised 27s. per head; other descriptions of sheep were sold at from 1s. to 2s. lower than last market day.

CASTLEBAR.—At the fair of this town, held on Friday last, the show of cattle was very indifferent. Prices were low, and much the same as those given at the other fairs held recently in the county. There was a small rise in pigs.—*Mayo Constitution.*

SHENLEY FAIR.—The supply of butter was so great that upwards of eight hundred tubs were left unsold, after all the dealers had satisfied themselves, and left the market. The prices then obtained were so low, that purchasers have since resorted to the town from various places, who have bought up a quantity of the good Welsh Butter, at the current price of the fair, viz. eight-pence halfpenny per pound. For cheese, there has been little demand, and the overplus of the fair will remain till December. The quality of the Montgomeryshire butter, which chiefly supplies our fairs, will always command a price in advance of the current rate in the wholesale market; but a vast quantity of Irish butter is sold in the manufacturing districts for Welsh, and the purchasers thereby defrauded both of quality and value.

MARLBOROUGH SHEEP FAIR.—This fair was held on the 23rd instant, where a great number of very fine sheep and lambs were penned, but comparatively little business was transacted until the middle of the day, the farmers being unwilling to submit to the reduced rates offered, and a general depression seemed to prevail; towards the close of the day, however, the fair became rather brisk, and many sales were effected, but at a very great reduction from last year's prices, the average being as follows:—Ewes, from 16s. to 22s.; wethers, 18s. to 24s., lambs, 12s. to 18s. There were a few fine Devon oxen, and some nag horses of a middling description, but very few of either sort were sold.

FAKENHAM, NORFOLK, Nov. 22nd.—At Hempton Green fair, which commenced on Monday last, the show of Scots was both large and good in quality; of Short-horns a fair supply; Devons and Irish not so many as last year. The buyers during the three days were tolerably numerous, and extremely cautious. Although both owners and salesmen were quite disposed to give way in price, there was great difficulty in effecting sales—for Scots 3s. 6d. to 4s., Short-horns 3s. to 3s. 6d., Devons and Irish 2s. 6d. to 3s. per stone of 14lbs. when fat, at which prices more than half the beasts remained unsold. We must admit it was the worst fair that has been known for years; there is a great fear and panic, which daily becomes more evident, and is seriously felt by owners and breeders.

PRICE OF CATTLE, FETHARD (TIPPERARY), Nov. 21.—The Winter Fair of this town was held this day. First, as to pigs:—About 1,200 bacon pigs were bought on the preceding days for the Waterford, Clonmel, and Carrick yards, rating from 24s. to 28s. per cwt., and averaging about £2 10s. each. At the fair this time twelvemonths the price obtained was from 42s. to 46s. per cwt., and pigs of similar weight and quality, average about £4 each. Thus the feeders of this district are short 30s. a pig of what they had every reason to expect, calculating on the price paid last year and on the high prices paid for the 'stores' when buying them in. This, in 1,200 pigs, amounts to £1,800. The attendance of buyers from Waterford, Cork, Wexford, &c., for fat cattle was greater than for many years, and the graziers took home more money than they expected coming to the fair. Nearly all the large lots of cows were disposed of: Mr. John Miller sold forty at £11 each; Mr. James Mittell, twenty at the same; other large lots went off from £9 to £10 10s. each; the highest price obtained was £19 10s., by Mr. Barton, of Grove, for a bullock; and Mr. James Chadwick got for a three year old heifer, £15; two large cows brought £13 each; £9 10s. was offered and refused for a lot of two year old heifers; and Mr. Rody Scully paid four guineas for some good yearlings. On the whole, the fair was rather encouraging to graziers. Very few sheep appeared; some middling wethers brought 38s. each. Milch cows as high as last year, rating from £9 to £13 each.

IRELAND.—THE CATTLE MARKETS.—There was a serious fall in the market of Smithfield, on Thursday; chiefly caused, it is said, by the failure of the extensive firm of Bell Brothers, of London, which was followed by the suspension of a house in the provision trade here. The house in London had correspondents in almost all the large towns in Ireland; and as the firm was connected with the execution of the navy contract for beef and pork, their stoppage of course took several buyers out of the market. With one or two exceptions, the country fairs are still exceedingly depressed. At Lurgan, on Tuesday, cattle were in better demand; but in Ballyclare the fall was from 2*l*. to 3*l*. below the rates of last year. At Templemarton, county Kilkenny, on Tuesday, store stock could scarcely be disposed of at any price.

THE HIGHLANDS.—MARKETS.—We regret to find that each successive market notes considerably downwards in the scale of prices this season. At Kenmore, on the 18th current, a goodly number of cattle of all ages was shown, but scarcely so many as was anticipated, from the dulness of sales in the previous part of the season, and consequent unwillingness of the tenants—ultimately to their loss—to part with their bestial at the then current prices. Still there was an average number, and a good many buyers—regular drovers and others—for winterings, and a fair demand, but prices were extremely low. Six-quarters-old from under 20s. to 40s. and 45s.; lean cows—one, hale in lith and limb—as low as 22s. 6d.! and upwards to 3*l*. Fat cattle at 4*l*., 5*l*., and 6*l*., according to size and quality. Most were sold at such prices as they would bring, as there was no prospect of better prices, for this season at least. In the meal market matters were equally dull. Best oatmeal at 13s. per boll, thence to 12s.; while pigs of a quarter of a year old were selling at 4s. and 5s. each. So much for present prospects.—*Perthshire Advertiser.*

REVIEW OF THE CORN TRADE

DURING THE MONTH OF NOVEMBER.

Nothing in any degree remarkable occurred in the corn trade during the month of November. The supplies of wheat of British growth, in all the large markets of consumption, have been unusually small for the season of the year, but the deficiency arising from this circumstance has heretofore been abundantly made good by free wheats of foreign production, particularly in Mark Lane. There the attendance of millers from all parts of the country has been large since our last publication, and the sales of foreign free wheats have consequently been so very considerable, as fully to confirm the observations made by us in our last number, as to the great inroad which, in two or three months, the consumption of foreign wheats would make on the stocks then remaining in the London granaries. Prices have not, however, as yet improved in proportion to the large quantities of foreign wheat now forced weekly into consumption, because pecuniary reasons chiefly have compelled many of the proprietors reluctantly to press their property on the different markets for sale. The large importers generally, who possess pecuniary means to hold their wheats, appear, at all events at present, to be little anxious to convert their property into cash at the present prices, the state of the trade exhibiting numerous signs of improved prices during the progress of the ensuing spring and summer months. In those seasons, for instance, wherein the wheat crop is abundant in quantity, and excellent in quality, the London market is chiefly supplied with wheat produced in the home counties, and generally under these favourable circumstances the sales of wheat are there confined to those millers who manufacture for the town consumption. This season is, however, widely different to those to which we have now referred. The supplies of wheat from the home counties are not only extremely small in Mark Lane, but millers from Surrey, Suffolk, Kent, Essex, and from many of the inland counties, do not find the supplies of wheats in their own neighbourhoods nearly equal to their wants, and consequently they have latterly been large purchasers of wheat in Mark Lane. This is reversing the usual custom of the trade in Mark Lane; and it is easy indeed to predict its consequences on prices as the supplies of foreign wheats fall off. The weekly deliveries from the granaries have been, and now are, thirty thousand quarters and upwards, and they have already materially reduced the quantities of foreign free wheats in the United Kingdom. Unless the home markets for the consumption of manufactured goods be in a healthy state, commerce of no description can prosper, and the home market can never be healthy unless the agricultural interest be prosperous. We must, therefore, consider any moderate improvement in the present value of wheat as a great national benefit, in as far as it will furnish means within ourselves for the productive employment of all the industrious classes of society. This is a most important advantage to the public in general, for surely it is far better to pay three pounds sterling for one quarter of wheat grown at home, than two pounds sterling for a quarter grown abroad; in as far as the three pounds remain in this country, giving employment to various descriptions of tradesmen, whilst the two pounds are sent abroad in payment for foreign wheat, are there embarked in foreign manufactures to compete in all markets with our own, and become thus a dead loss to the wealth of the British empire. The commercial distress, to which we unfortunately have been subjected during the last four years, has its origin chiefly in this source, for during that period the seasons were most unfavourable to the crops generally throughout the British islands. Immense importations of wheat from foreign nations became thus absolutely necessary to the wants of the people, and these importations were paid for, not in British manufactured goods, nor in any article produced by the labour of the British people, but by hard money, from which circumstance we are now suffering; for, as we cannot eat the goose and afterwards have her eggs, so likewise we cannot export our money to foreign nations, and have also at home that additional quantity of productive employment which the exported money would have created had it been exchanged for provisions produced at home, instead of having been paid away to the foreign producers of the grain which, unfortunately, circumstances have compelled us to import. The value of foreign grain, imported here during the last three or four years, may be estimated at somewhere betwixt twenty-five and thirty millions sterling; and, as during the same years our exportation of British goods to those nations from which we imported this vast amount of foreign agricultural produce, both in quantity and value, has been regularly on the decline, we are well entitled to assert that in money alone have these large provision payments been made by us. We particularly call the attention of our manufacturing readers, therefore, to the important fact, that English money, when remitted to foreign nations in payment for foreign food, is not only withdrawn, or rather substracted, from the means of the inhabitants of the British empire to pay for British manufactured goods, but is actually invested afterwards in foreign factories of various descriptions, wherein goods are produced which supersede the use of ours in *their markets*, and which are often placed in competition even with our goods in our own, and in our colonial markets of consumption. A free corn trade, therefore, is and must be even more injurious to our manufacturers than, by any possibility, it can be to our land owners and to their tenantry. We have now had the corn trade free enough for all the purposes of commerce during the last four years, and the real consequence now is an increasing production of foreign manufactures, at the sole expence of the British nation. We furnish Germany, for instance, with money in exchange for grain, and by means of this money the Germans are annually increasing their manufacturing property, and their consumption of British manufactured goods is naturally also annually on the decrease from the same cause. Nothing could have happened more favourable to the illustrations of the principles of the anti-corn law leaguers, than the state of the corn trade for several years past has been; and yet certainly nothing could have given a more direct contradiction to the truths of these principles than the result of our immense importations of foreign grain have done, nor could more powerful arguments be produced in favour of extending and improving the cultivation of our own fields than may be drawn from the present state of our trade generally, both internal and foreign. Within the three kingdoms there are many millions of acres of land in a state of nature, and consequently nearly useless to the people, a great portion of which may be brought into tillage by the application of capital, talent, and industry to its cultivation; and as the science of agriculture progresses, there is not at the present moment one field, however admirably it may be under the existing system cultivated, which may not be rendered still much more productive than it is just now. Under a system of legal protection to home industry, whatever may be its direction, we have, in the greatest abundance, the means of productively employing, and of amply feeding, double our present population; but our liberal doctrines at present prevent the empire from obtaining these great advantages. Had the thirty millions sterling which our late nearly free corn trade system has drawn out of this country within the last four years, and which sum is now employed in increasing foreign manufactures, and in improving foreign agriculture, been even in part applied to the cultivation of our lands at home, no distress would at the present day be heard of amongst the people, nor would the legislature hereafter be called on to provide food and clothing for a surplus population so frequently as has latterly been the case. In fact, for a century to come, at all events, sufficient employment may be found for all at present out of work in the cultivation of waste lands at home. In labours of this description, they will not only be soon rendered useful to themselves, but likewise become valuable members of the community. To transport agricultural labourers to the colonies for the purpose of tilling lands doubly more wild than any to be found in the united kingdom, is a policy not easily to be comprehended; but yet it is considered by modern political economists as a solid cure for all our national evils. Surely, however, the improvement of our fields at home should be the first object of the statesman, and the cultivation of the wastes in North America may be commenced after our agricultural operations at home are perfected. Protection to property when invested in the improvement of agriculture and manufactures, is the only thing necessary to change the appearance of the fields themselves throughout Great Britain and Ireland, and to the production of at least three times the quantity of food now gathered from them under the present system of free trade. No increased exportation to foreign nations of British manufactured goods, even were such an event possible, can ever be nearly so valuable to the commonwealth as the better cultivation of the land may be eventually rendered; but prosperity must attend the labour and the anxiety of the farmers, before any further great advance can be looked for in the science of farming. From present appearances, we feel ourselves justified in anticipating that the coming corn season may be much more in favour of the landed interest, and of the tenantry, than the last four years have been—for weather is an excellent paymaster; and it is but natural to suppose, that four unfavourable seasons may be succeeded by four good ones. The season for sowing the winter wheats could not have been more favourable than the one has been which has just been completed; and seldom indeed, at this period of the year, have the young plants appeared to greater advantage: indeed they almost require a check to prevent them from becoming too luxuriant. A much greater breadth of land is now under wheat cultivation than has been for some years previously, and favourable weather therefore alone is necessary to bring the wheats now in the ground to a favourable conclusion. There is, therefore, a prospect, most certainly, that if under the extraordinary position in which the laws have latterly placed the agricultural interest, a large crop of wheat be beneficial to the farming interest, prosperity will attend it at the close of the ensuing harvest. But, in future, their crops must universally be interfered with in our home markets of consumption by foreign crops of the same description, produced generally in lands paying no rent, and cultivated by serfs, slaves and boors, receiving no wages for their labour beyond a small portion of the crop itself of the coarsest quality, and in quantity barely sufficient for the support of nature. It may, therefore, be reasonally doubted whether a bountiful growth of agricultural produce hereafter can be of any material advantage to the cultivators of the soil at home. After the turn of the year, however, there certainly exists a strong probability, as we have already shewn, that agricultural produce will improve in value; although, at the close of November, wheat was not in brisk demand at a small decline in prices. This decline, however, was rather the effect of inferiority in quality than of any alteration in the intrinsic value of wheat itself; and as the stock of foreign wheats of fine quality must during the spring and summer months be so materially reduced as to render its weight in the markets of consumption of less and less consequence; we therefore consider, that we have both good and solid grounds for anticipating a material improvement in the value of British wheat, before the coming crop can be brought into consumption.

The letters received from North America, since our last publication, are, we may say, in due course of post. The dates from Boston are to the 16th and those from Halifax to the 18th of last month'. from the Canadas, and from our different American' settlements, the information received is of correspondent dates. Much interest had been created in, and high expectations had naturally been formed from, the results which hereafter must attend the corn trade betwixt this country and our American colonies. Corn speculators on both frontiers were making arrangements for the extensive Prosecution of the corn trade; and as soon as the season permits, large quantities of wheat grown in the United States will be smuggled into our American possessions. The coast is by far too extensive to prevent an illicit corn trade. Custom-house officers cannot be effectively placed along a line of two thousand miles; and the Canadian duty of 3s. per quarter on the importation of foreign wheat can therefore never be collected. Here will be a benefit indeed to the Canadian smuggler, and extended to him by our statesmen and rulers, at the expence of the cultivators of our fields at home. During the next summer and harvest months, large importations of wheat and flour, the growth of the United States, will be received here through our American possessions; very probably, on the payment of a duty of 1s. per quarter. We know not by what fatality such advantages are held out by our government to the American landed interest. Our farmers are subjected to the payment of heavy rents, and of oppressive taxes, both public and local; whilst Jonathan has nothing of the sort imposed on his industry; and therefore competition betwixt him and us is totally out of the question. Jonathan repudiates the debts, which he most justly owes to the British nation. He places prohibitory duties on the importation of British goods into his republic; he very naturally, and most properly takes from us all the advantages which he can get, and he gives us nothing of the slightest value in return. We have opened a market for the consumption of his agricultural produce of every description, whilst he closes his ports against the reception of almost every thing British. But this system cannot long be persevered in, unless it be the pleasure of the British government to wipe away the British national debt, as Jonathan has done *that due by him, chiefly too,* to British capitalists. In this event, indeed, our farmers would have no cause to fear competition with those of the United States, for it would be cancelling nearly one half of our yearly national expenditure; but at the present average prices of British wheat, it is not possible that the annual revenue can be for many years collected. For the sake of the public credit and honour therefore of the British empire, our internal industry must be protracted to a reasonable extent against foreign competition, and more particularly against that of the United States of North America, for the wages of the productive classes, whatever may be their vocations, cannot be paid at the present rates, unless a material improvement takes place in the value of agricultural and commercial property. We already pay many millions sterling annually to the Americans for cotton wool, and this is a legitimate trade, for we cannot produce cotton in this country, and we want as much of it as America can spare. But widely different are grain and provisions, for on the home growth of agricultural produce depends not only the strength, but the being itself of the British empire. The act of transferring productive employment from our labourers at home to those of the United States is most injurious to the prosperity and happiness of the British people. Reciprocity, properly so called, is impossible in the existing state of society. The Americans prohibit, as we have already said, the consumption within their territories of nearly all descriptions of British manufactured goods, and the real reciprocity system for our adoption is the application of similar restrictions to all articles produced in the United States, and imported into this country. In the meantime both wheat and flour continued in demand in all the corn markets throughout the United States at the latest dates, and prices were fairly maintained, arising from the prospect of the English markets being opened without the payment of any but a nominal duty. It will, however, require several months yet to mature the smuggling system over the Canadian frontiers, and therefore no impression can be made on prices in our markets for several months to come, by importations of wheat and flour from our North American possessions. We shall, however, soon be supplied with large quantities of salted beef, pork, and hams, now in the progress of being cured there for the British markets. The quantity of cheese now, we may say, daily imported from the United States, is increasing. The duty charged here on this article is something above 1d. a pound, whilst Jonathan charges 6d. per pound on English cheese imported into any of his harbours for the consumption of American citizens. Surely the British ministers cannot permit a trade of this description to exist, for it is injurious in the highest degree to the interests of the farmers, and generally of the British community; enriching, as it must eventually do, American agriculture at the expense of the United Kingdom. From the corn markets within the Mediterranean and Black Seas, and from those in the southern states of Europe, without the gut of Gibraltar, the advices received, during the last month, are perfectly without public interest. The prices of grain and pulse in all of them were nearly nominal at the latest dates. The demand continued to be entirely regulated by appearances in the corn market at Mark-lane, for this is the important pivot round which the value of all descriptions of food mainly revolves, we may almost say, throughout the civilized portion of the globe. In Egypt there was an abundant supply of wheat, but no buyers were in the market of Alexandria. Some parcels of beans had however been purchased for the British market. In the ports in the Adriatic Sea, a similar want of animation in the corn trade existed, having its origin also in the want of a demand for England. In the lower ports of Italy the same complaints respecting the want of a foreign demand for agricultural produce continued to exist, to which we alluded in our last publication. At Marseilles some business was doing in grain for home consumption, but foreign bonded wheat continued entirely without any demand. The information from Malta is equally uninteresting respecting the state generally of the grain trade. England held out no encouragement to speculators, and dulness consequently pervaded every corn market. It is rather a curious fact that nearly all the inferior and unsaleable foreign wheats now in England, have been imported from the ports in the Black, and in the Mediteranean Seas. Those embarked in the corn trade then are wonderfully ignorant of the quality of wheat suitable for consumption in England, and it will be well worth the expense if speculators in future send out a gentleman well acquainted with the operations in the Corn Exchange in Mark-lane, to inspect the wheat previous to its shipment to any port within the United Kingdom. From the northern ports of Spain without the Mediterranean Sea we of course receive little wheat at any time, but the importation of black cattle is gradually on the increase. Three or four years hence, however, we doubt not that this trade will be equally valuable to the agricultural interest in Spain, as it most undoubtedly must be injurious to the breeders and feeders of cattle within the United Kingdom.

In the north of Europe, and in all the corn markets within the Baltic Sea, the weather has for a time prevented shipments being made to any extent of any description of grain. At the latest dates, therefore, the quotations for wheat were nearly nominal, there being then no demand for this article from England, to be forwarded when the navigation again becomes practicable. At Dantzic, Elbing, and the other ports for the shipment of Polish wheats, 35s. per quarter free on board was nearly the value of the best qualities in English money, but excepting in a few parcels for Holland and Belgium, no prospective business had been done. As soon, however, as the rivers again permit water communication with the interior, the supplies in all these places must become abundant, and prices then must be governed, as usual, by the standard of corn value, as established on the Corn Exchange in Mark Lane. That shipments then of considerable magnitude will be made to England, may be calculated on as a matter of certainty, but the greatest proportion of them cannot arrive at the place of destination before the end of the next summer and the harvest time. From this quarter, therefore, and from the other corn markets higher up in the Baltic, the future supplies cannot interfere much with the future value of wheat in the United Kingdom until that period arrives when our new wheat crops come into consumption; and then it will become apparent even to the Corn Law Leaguers themselves that the last corn law extends no effective protection to British agriculture. The maximum duty of 20s. per quarter cannot prevent high-mixed Polish wheats from being then entered for home consumption; for prices, in the ports of shipment, will decline at that time four or five shillings per quarter under their present nominal value, unless unfavourable weather should previously cause unfavourable appearances in the wheat fields here; and then to pay a duty of 20s. per quarter cannot render shipments even to a great extent unprofitable. We have repeatedly said that the finest qualities of foreign wheats were always worth from 7s. to 10s. per quarter more than our average price, and thus quality always pays nearly one-half of our highest importation duty, under almost any circumstances. From Stettin, Rostock, and the ports near the mouth of the Baltic, and from Hamburg and all the corn-shipping places in Germany without that sea, we shall also probably receive considerable supplies in the month of June; for the last wheat crops in Pomerania, Silesia, and in the various large corn districts in these parts, are of excellent quality, although perhaps rather deficient in quantity. The landed proprietors, therefore, will willingly sell their crops for exportation, even at low prices, the consumption of wheat not being much known amongst the rural population in the grain-producing countries on the continent of Europe; and thus a most disheartening prospect is opening itself to the British and to the Irish agricultural population. Our field labourers cannot compete in cheapness of living with the serfs of Poland, the slaves of Russia, the boors of Germany, nor with the helps of America. Our farmers have heavy taxes, heavy rents, and fair wages for labour to pay; whilst the land proprietor abroad generally employs half-starved wretches to produce for him his crops. It is utterly absurd to mention the word competition under such circumstances. In fact, a continuation of the present system must be attended by ruinous consequences to this empire. The loss of the precious metals must be the first sacrifice made by us to the free trade in corn system. The placing the national debt in a dangerous position will be the second sacrifice, and on the heads of the manufacturers themselves must the calamity finally fall. To the landed proprietors, to their tenantry, and to our field labourers themselves, the calamity eventually cannot be of so much consequence as it must be to the manufacturers and to their workmen, for whose interests these free trade principles have been adopted. To reduce the value of all property in this country to its level in foreign states, is certainly a policy beyond the comprehension of common minds. That the growers of foreign grain will exchange their crops with us for our manufactured goods, instead of for the precious metals, is as wild a fancy as possibly ever entered into the human mind. Polish serfs, and Russian slaves, and German boors, clothed in Leeds and Manchester manufactures, is certainly a beautiful theory, but impracticable.

The maltsters are now generally at full work, and, as the barleys of the last crop are weighty, and of fine quality, the demand for them in the course of last month has been fully equal to the supplies, although they have been rather abundant than otherwise. It was much feared at one period, that the hot weather of the last summer and autumnal months would have rendered the barleys flinty; but, although in some cases this complaint exists, still generally they work kindly, and the malt produced from them is consequently of excellent quality. Prices of the best qualities have been sustained better than, under the state of the country, could have been expected; indeed, they are about 2s. higher than our quotations were in our November number. Still the barley trade is far indeed from being in its legitimate position. It is oppressed by oppressive laws, and its growth is stunted by this cause. A million or two of acres of sandy soil, now perfectly useless to the inhabitants of the United Kingdom, might be brought forward into barley cultivation, and the luxuries of a vast mass of her Majesty's subjects might be at least doubled from this agricultural improvement. To draw from manufactured barley, however, nearly one quarter of the national expenditure is too easy an operation to the Chancellor of the Exchequer for us to suppose that he would listen to any proposition by which such a valuable source of taxation might be endangered; but the time is approaching when he must pay greater attention to the complaints of the British and of the Irish agricultural interests than for many years past the Finance Minister has felt any inclination to do. It has often been our duty to point out to our readers that, even if all the malt manufactured under the present system was reduced into beer of even low strengths, the quantity to each individual in the British empire would be small indeed. Beer extracted from much less than five millions of quarters of malt would furnish but short annual allowance when divided amongst thirty millions of human beings. Double the quantity would not be more than sufficient to satisfy their moderate wants. Liberality on the part of ministers in this respect, would be attended by the most important results to the British empire. The productive labour which the cultivation of an additional quantity of barley lands, to the extent of one or two millions of acres, would create, and the abstraction of these acres from the wilderness, would do much more than pay for the additional quantity of beer which would thus be consumed. Their cultivation would give bread to many thousands of agricultural labourers and their families, now in a state of absolute destitution; and also would materially increase the annual income of the landed interest. The reduction of the malt duty from its present exorbitant rate to one of 1s. per bushel, would go far to produce this desirable effect; and, so far from diminishing the amount at present paid into the Exchequer from the malt duty, it would, in a very few years, increase it in an equal ratio to the increase in the happiness of the people which it would occasion. There is, however, one source of revenue at present which should be applied to the benefit of the agricultural interest, because it heavily injures the cultivators of British and Irish fields. We now allude to the duties collected on foreign grain of all descriptions, when imported here for home consumption. Out of this fund, one quarter of the present malt duty, if remitted, might be replaced in the Exchequer, and even this small reduction would be of some consequence to the barley producers and to the beer consumers. So long as the present corn law and the present tariff of duties on foreign provisions are permitted to exist, the duties collected from them should be applied to the reduction of the extravagant duties now levied by the excise on articles of British manufacture. The prime minister in his last *exposé* of the financial state of the country did not place to the credit of his yearly income one penny from duties on foreign grain, or on foreign provisions consumed in this country. Whatever he gets, therefore, from this source is to him an extra revenue; and he has no excuse whatever for not applying it to the relief of the agricultural interest, so severely injured by his liberal measures of commerce. In fact, his attention should immediately be turned to our internal tariff of duties, with a view to its revision. Next in importance to the malt duty, he will find the duties now charged on the English distilleries, and he may discover that to reduce them is the certain way to improve not only the public revenue, but the morals themselves of the people. The charge in England on the distillation of home-made spirits is three hundred and upwards per cent. on the original cost of the raw material, and this holds out the strongest temptation to the illicit dealers in spirits. It is a premium, offered by the law itself, for the commission of crime. It is injurious to the virtue of temperance herself, in as far as it places drunkenness on her right hand, and teetotalism on her left; and a radical change should therefore be immediately made in the system. One-half of the spirits now consumed in England is of foreign manufacture; the quality is of the worst description, and the revenue is defrauded by their importers of the duty which, for the protection of our home distilleries, the law requires to be charged on spirits of foreign manufacture. The charge on home-made spirits should be equalised throughout the United Kingdom. One of 5s. on each proof gallon on home-made, and on colonial spirits, would in a few years entirely suppress the trade of the spirit smuggler, because it would no longer be profitable. The spirit revenue would also thereby be rendered much more productive than it has ever been heretofore, and the expense of its collection would be reduced very considerably. Half a million sterling may, for instance, be saved in the expenditure of the preventive service alone, and no longer would it be necessary for barley manufacturers to bribe excisemen for the nonperformance of their public duty, were the duties on spirits distilled in England only reduced to moderation. An alteration in the restrictions under which the rectifiers of neutral spirits are now placed, would be equally beneficial to the agricultural interest, and to that of the community in general. At present the law prohibits British rectified spirits from being sent into consumption, till they be reduced from 18 to 20 under proof, whilst Dutch gin, and French and Spanish brandies can be legally sold at any strengths which suit the pocket of the merchant and the palate of the consumer. In wholesomeness it is admitted on all hands that our rectified spirits are superior to any manufactured either in France or in Holland; and if ours could be sold at fair strengths, our rectifiers would speedily excel all others as much in flavour as they now do in quality. Another material advantage would arise from a modification of the laws now applicable to our home distillers and rectifiers. The large sum of money now annually paid to foreigners for foreign spirits consumed in this country, from whence it never returns, would be employed usefully at home, and would form increased channels for the due encouragement of our internal industry by the addition which it would make to wages.

In the oat trade very little alteration has taken place since our last publication. The markets generally have been plentifully supplied, and large sales have been effected, but at miserably low prices. The average price by which foreign importation is governed has latterly varied very little from 18s. per qr.—a price at which it is utterly impossible that this article can be profitably produced in any part of Great Britain or in Ireland itself. From the latter kingdom, the average expense on each qr. sent to England is not less certainly than 5s.; and how the rent, field labour, public and private taxes, interest of capital invested in the farm, and numberless other charges, are to be paid out of 13s. per qr. for Irish oats, modern political economists may be able to tell; for the calculation is far beyond our comprehension. In what way the British manufacturer is to be benefited by the destruction of the British and Irish oat grower, no doubt the cotton lords know, else they would not urge the transfer of the growing of oats, consumed within the United Kingdom, from our own farmers to the proprietors of foreign oat fields. Already the maximum oat duty is found to be no protection to our agricultural interest, for the best samples of foreign oats are now worth from 24s. to 25s. per qr., and the freight and charges for sending oats to any part betwixt Falmouth and the ports in the north of England and Scotland, from Germany and Denmark, cannot exceed 2s. 6d. per qr. Indeed, the present freight of this article to London, Hull, &c., is only from 1s. to 1s. 3d. per qr., and that paid to ships navigated by foreign seamen, and sailing under foreign flags. In what manner an alteration so fatal to the future improvement of agriculture at home can be of any benefit to the commerce of the British empire, we have yet to learn; or what advantage the manufacturers expect to gain from placing many thousands of Irish agricultural labourers entirely out of productive employment, is a secret not yet divulged by the anti-corn law leaguers in any of their lectures on the principles of free trade. For the internal improvement of the country, the prosperity, however, of the agricultural interest is absolutely necessary, and the extension of the production even of oats in Ireland is an object far more important to the people in general than any improvement in manufactures, arising from a free corn trade, ever can be. A great addition may be thus annually made to the real wealth of the British empire, by the cultivation of several millions of acres of waste lands, which Ireland at the present moment possesses. The consequence would be the full employment of her at present only partially employed people, and the increase annually of her coasting trade. Agriculture in

Ireland is only yet in its infancy, and to bring it forward towards perfection requires the protection of the legislature; for without some assurance of this description neither capital, talent, nor industry can be embarked with safety, in such patriotic undertakings as Ireland now offers to the best interests of the British empire. For foreign supplies of oats, we not only pay cash for the oats themselves to the foreign producers, but we likewise pay cash for the freight and charges attending the transfer of them to our shores, to the proprietors of foreign ships. Of this cash not one penny ever returns to this country. This is proved by the sad experience which, during the last four years, we have had of a virtually free corn trade; but to pay money to the Irish producers of oats is not to abstract it from circulation within the United Kingdom. It remains at home, and is not for one moment withdrawn from the productive employment of the people in various channels of industry, and from adding to the nation's wealth and the people's happiness.

CURRENCY PER IMP. MEASURE.

Nov. 28.

	Per Qr.				Per Qr.		
Wheat, Essex and Kent, red	46	52	54	White	50	54	58
Irish		46	48	Do.		48	52
Old, red		—	—	Do.		—	—
Rye, old		32	—	New		32	—
Barley, Grinding 24 27 Malting		30	32	Chevalier		32	34
Irish		21	23	Bere	19	20	22
Malt, Suffolk and Norfolk		56	58	Brown		50	54
Kingston and Ware		56	60	Chevalier		60	—
Oats, Yorksh. & Lincolnsh., feed		20	23	Potato		23	25
Youghall and Cork black		16	17	Cork, white		18	19
Dublin		17	18	Westport		18	19
Waterford, white	17	18	19	Black		16	17
Newry		20	21				
Galway		12	15				
Scotch feed		22	—	Potato		21	24
Clonmel	18	19	20	Limerick	18	19	21
Londonderry		18	19	Sligo		18	19
Beans, Tick, new		30	32	Old		32	34
Peas, Grey		31	33	Maple		31	33
White		32	33	Boilers		35	38

Seed, Rape...... —*l.* —*l.* Irish..—*l.* —*l.* per last.
Linseed, Baltic....40 46 Odessa 48
Flour, Town-made 43 45 Suffolk 34 — pr sk. of 280 lbs
Stockton and Norfolk, 35 —

FOREIGN GRAIN AND FLOUR IN BOND.

Wheat, Dantzic	—	—			
Hamburg	—	—			
Rostock	—	—			
Barley	20	—			
Oats, Brew	15	17	Feed	12	14
Beans	18	24			
Peas	20	24			
Flour, American, per brl	22	24	Baltic	—	22

IMPERIAL AVERAGES.

Week ending	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas	
Oct. 15th	51	1	28	10	18	0	31	7	32	4	33	3
22nd	50	9	28	11	18	1	32	7	32	2	33	10
29th	49	5	28	4	18	5	31	7	32	2	33	7
Nov. 5th	48	7	28	2	17	5	29	10	31	11	34	4
12th	48	8	27	11	17	9	32	2	31	8	33	2
19th	49	8	28	1	17	10	31	8	31	6	34	2
Aggregate average of the six weeks which regulates the duty	49	8	28	5	17	11	31	7	31	11	33	9
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	20	0	9	0	8	0	10	6	10	6	9	6
Do. on grain from British possessions out of Europe	5	0	2	0	2	0	1	6	1	0	1	0

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, Nov. 25th, 1842.	s.	d.	AVERAGES from the corresponding Gazette in the last year, Friday, Nov. 26th, 1841.	s.	d.
Wheat	49	8	Wheat	64	9
Barley	28	1	Barley	32	4
Oats	17	10	Oats	22	6
Rye	31	8	Rye	44	7
Beans	31	6	Beans	41	2
Peas	34	2	Peas	40	9

Account shewing the Quantities of Corn, Grain, Meal, and Flour, imported into the United Kingdom, in the month ended the 5th Nov., 1842; the Quantities upon which Duties have been paid for Home Consumption during the same month, and the Quantities remaining in Warehouse at the close thereof.

Foreign Grain and Flour.	Quantity imported.			Quantity entered for consumption.			Quantity remaining in warehouse.		
	qrs.	bush.		qrs.	bush.		qrs.	bush.	
Wheat, from British Possessions	858	2		243	2		1025	3	
Peas, from do.	329	5		329	5		388	1	
Indian Corn, do.	15	0		230	4		1193	3	
Wheat, foreign	94842	3		2627	7		148462	4	
Barley, do.	2665	1		4198	5		75452	7	
Oats, do.	9719	2		873	6		78850	1	
Rye, do.	—			0	4		1366	6	
Peas, do.	1296	2		2074	1		35317	6	
Beans, do.	18135	3		9035	6		79495	2	
Indian Corn, do.	1177	0		96	6		11244	7	
Buck Wheat, do.	5	1		5	1		....		
	cwts.	qrs.	lbs.	cwts.	qrs.	lbs.	cwts.	qrs.	lbs.
Flour and Meal from British Possessions	13627	2	22	8785	3	7	12152	0	4
Flour & Meal, foreign	5189	1	8	145	2	19	33931	2	21

PRICES OF SEEDS.

Nov. 28.

There was not much doing in any species of seeds, and with the exception of a slight decline in the value of Canary, no change deserving notice occurred in prices.

Linseed, English, sowing	48	56				
Baltic	—	—	crushing	42	45	per qr
Mediter. & Odessa	45	46				
Large, foreign	—	—				
Clover, English, red	—	—	white	—	—	per cw
Flemish	—	—	do.	—	—	nominal.
New Hamburgh	—	—	do.	—	—	
Old do.	—	—	do.	—	—	
French	—	—	do.	—	—	
Hempseed, small	35	38	large	46	48	
Rye Grass, English	30	42	Scotch	18	40	
Tares, winter	—	—	New	5s 0d	6s 0d	
Canary, new	70	71	fine	72	73	
Carraway, old	—	—	new	42	44	
Coriander	10	16	old	16	18	per cwt
Mustard, brown, new	10	11	white	10	10s 6d	p. bush
Trefoil, new	18	22	old	12	16	
Rapeseed, English new	31*l.*	33*l.*				
Linseed Cakes, English	10*l.* to 10*l.* 10s.					
Do. Foreign	7*l.* to 7*l.* 10s.					
Rapeseed Cakes	5*l.* 5s. to 6*l.* 0s.					

PRICES OF HOPS.

BOROUGH, MONDAY, Nov. 28th.

In the hop trade there has been very little activity since the duty was officially made known; and the prices, from its even exceeding the highest estimate of production, are of necessity depressed. The excess upon a comparison with the duty last year, and in 1840 is very considerable. We quote Sussex pockets, 70s. to 78s.; Weald of Kent, 72s. to 82s.; Mid Kent, 84s. to 120s.; East Kent, 90s. to 120s.; and Farnham, 112s. to 130s. per cwt.

POTATO MARKET.

SOUTHWARK WATERSIDE, Nov. 28.

The following abundant supply has arrived to this market since our last report, viz. :—From Yorkshire, 1520 tons; Scotland, 1120; Devons, 525; Kent, Essex, and Suffolk, 570; Jersey and Guernsey, 740; Wisbeach, 370; total, 4845 tons. The demand remains very inactive, and sales difficult except for superior samples, with little variation on our former quotations.

York Reds	55s. to 60s.	per ton.
Scotch ditto	45s. to 50s.	"
Devons	—s. to 50s.	"
Kent, Essex, and Suffolk Whites	40s. to 45s.	"
Wisbeach	35s. to 45s.	"
Jersey Whites	—s. to 35s.	"
Jersey and Guernsey Blues	—s. to 45s.	"
Yorkshire Prince Regents	—s. to 50s.	"

WOOL MARKETS.

BRITISH.

Nov. 28.

Down Ewes and Wethers	10d. to 10½d.
Down Teggs	11d. to 12d.
Half-bred Wethers	10d. to 11d.
Half-bred Hogs	12d. to 12½d.
Flannel Wool	8½d. to 12d.
Blanket Wool	5d. to 7½d.

LIVERPOOL, Nov. 26.

Scotch.—There has been rather more disposition to do business in laid Highland Wool since the good news from China and India has been confirmed; but holders are asking rather more money. White Highland was scarce. In crossed and Cheviots there has been little if any thing done, and we keep our quotations as before.

	s.	d.		s.	d.
Laid Highland Wool, per 24lbs.	6	6	to	7	0
White do. do.	9	9		10	3
Laid Crossed do. unwashed	7	9		8	3
Do. washed do.	8	6		9	6
Do. Cheviot unwashed do.	8	0		10	6
Do. washed	12	0		14	6
White Cheviot, washed	19	0		22	0

Foreign.—The confirmation of the settlement of the Chinese war has had a beneficial effect on our market; and although we cannot quote any advance we already experience a more animated demand. The result of the public sales now going forward in London will give tone to our markets.

PRICES OF MANURES.

Bone-dust, 21s. 6d. per qr. of 8 bushels
Half-inch Bones, 21s. 6d. per qr. do.
Rape-dust, 24s. per qr. do.
Rape Cake, 6*l*. 6s. per ton.
Rags, 4*l*. to 4*l*. 10s. per ton.
Graves, 5*l*. to 5*l*. 10s. per ton.
Gypsum, 38s. per ton.
Salt, 2*l*. 0s. dirty, 2*l*. 15s. clean, per ton.
Soap ashes, 10s. per ton.
The Urate of the London Manure Company, 5*l*.0s. per ton.
Hunt's New and Improved Artificial Manure, 13s. 4d. per qr.
Willey Dust, 4*l*. 4s. per ton.
Artificial Guano, 15s. per cwt.
Nitrate of Soda, 19s. 0d. to 19s. 6d. per cwt.

PRICES OF SHARES.

No. of Shares.	Div. per Ann.	IRON RAILWAYS.	Price per Share.
6,300	1*l* 4s p.c.	Birmingham & Derby ..100*l* sh pd	40 a ½
6,300	8s	Do. Thirds, iss. 8⅛ dis. 33⅓*l* sh 25*l* pd	
9,500		Do. and Gloucester ...100*l* sh pd	
10,000		Do. New, iss. 7½ dis. 25*l* sh 17½*l* pd	
15,000	4*l* per ct	Bristol and Exeter..100*l* sh 70*l* pd	
7,500	2*l* 10s	Cheltenham & Great Western 100*l* sh 80*l* pd	
3,000		Clarence..............100*l* sh pd	
64,000	18s p sh.	Eastern Counties ....25*l* sh 23*l* pd	9 a ¼
		Ditto New............8*l* 6s 8d pd	11⅛ a 11
64,000		Ditto Debentures .. 8*l* 6s 8d sh pd	11¼ a 11
12,500	3½*l* per ct	Glasgow, Paisley, and Ayrshire 50*l* sh pd	
18,000	5*l* per ct	Edinburgh & Glasgow .. 50*l* sh pd	48½
18,000		Ditto New..........12½*l* sh 5*l* pd	5
16,000		Glasgow, Paisley, and Greenock, 27*l* sh 25*l* pd	
10,918	10*l* per ct	Grand Junction........100*l* sh pd	
11,000	5*l* per ct	Ditto Half Shares ......50*l* sh pd	
10,000	2½*l* per ct	Great North of England 100*l* sh pd	
25,000	4*l* per sh	Great Western .... 100*l* sh 65*l* pd	85¾ a ½
25,000	3*l* per sh	Ditto New..............50*l* sh pd	62 a ¼
37,500	5s per sh	Ditto Fifths..........20*l* sh 4*l* pd	8⅛ a ¼
		Ditto Bonds....1849	
		Ditto Bonds 1850, Letter C	
2,000		Hartlepool............100*l* sh pd	
8,000	1*l* per sh	Hull and Selby .... 50*l* sh pd	
2,100	5*l* per ct	Leeds and Selby........100*l* sh pd	
5,100	10*l* per ct	Liverpool & Manchester.100*l* sh pd	
7,968	10*l* per ct	Ditto Half Shares......50*l* sh pd	
11,475	10*l* per ct	Ditto Quarter Shares ..25*l* sh pd	
36,000	1*l*	London and Brighton....50*l* sh pd	35 a ¼
		Ditto Loan Notes....... 10*l* sh pd	10⅜
48,000		London & Blackwall Av. 16*l* 13s 4d	6 a 5⅞
43,077	3s	London & Greenwich Av. 12*l* 15s 4d	5
11,136	5*l* per ct	Preference or Privilege Av. 18*l* 17s 2d	
	5*l* per ct	Ditto Bonds (183,300)............	
25,000	10*l* p sh	London & Birmingh. 100*l* sh 90*l* pd	185 a 6
25,000	2*l* 10s	Ditto Quarter Shares....25*l* sh pd	
31,250	3*l* 4s	Ditto Thirds........... 32*l* sh pd	63 a 2½
	2*l* 14s	Ditto New.......... 32*l* sh 2*l* pd	32
		Ditto Bonds 1843	
46,200	3*l* per sh	London & South West. Av. 41*l* 6s 10d	60 a ½
		Ditto Bonds 1842	
33,000	13s 4d p s	London & Croydon..Av. 18*l* 15s 9d	9½ a ¾
2,000	3*l* per ct	Llanelly Railway and Dock 100*l* sh 70*l* pd	
13,000	3*l* 17s p sh	Manchester & Leeds 100*l* sh 70*l* pd	68 a 9
13,000	1*l* 13s p sh	Ditto New Shares ....50*l* sh 30*l* pd	
	4s	Ditto Quarter Shares........2*l* pd	
30,000		Manchester & Birming. 70*l* sh 40*l* pd	
		Ditto Extension......70*l* sh 7*l* pd	
10,000	3*l*	Midland Counties......100*l* sh pd	61 a 2
10,000	15s	Do. ¼ Shares, iss. 10 dis. 25*l* sh 15*l* pd	
		Newcastle & Darlington Junction 20*l* sh 3*l* pd	4¼ a ⅜
15,000	2*l*	North Midland........ 100*l* sh pd	62½ a 2
15,000	1*l* 0s	Do. ½ Shares, iss. 10 dis. 50*l* sh 40*l* pd	
22,500	13s 4d	Ditto Thirds, iss. at 11*l* 13s 4d dis. 21*l* 13s 4d sh pd	20½
10,256	2*l*	Northern & Eastern 50*l* sh 45*l* pd	36¼
3,136		Do. Scrip . iss. 5 dis. 50*l* sh 5*l* pd	9 a ⅛
72,000		Paris and Rouen ....20*l* sh 20*l* pd	23¼ a ½
7,000	5 per ct	Sheffield, Ashton-under-Lyne, and Manchester .... 100*l* sh 82½*l* pd	
1,000	1*l* 15s	Sheffield and Rotherham 25*l* sh pd	
1,500	15*l* per ct	Stockton and Darlington 100*l* sh pd	
28,000	4*l* per ct	South Eastern and Dover 50*l* sh pd	23¼ a ⅜
28,000		Ditto New, iss. 25 dis. 25*l* sh 20*l* pd	19 a ⅛
6,700	10*l* per ct	York & North Midland..50*l* sh pd	
6,700	10*l* per ct	Ditto New Shares.... 25*l* sh 20*l* pd	37½ a 8

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